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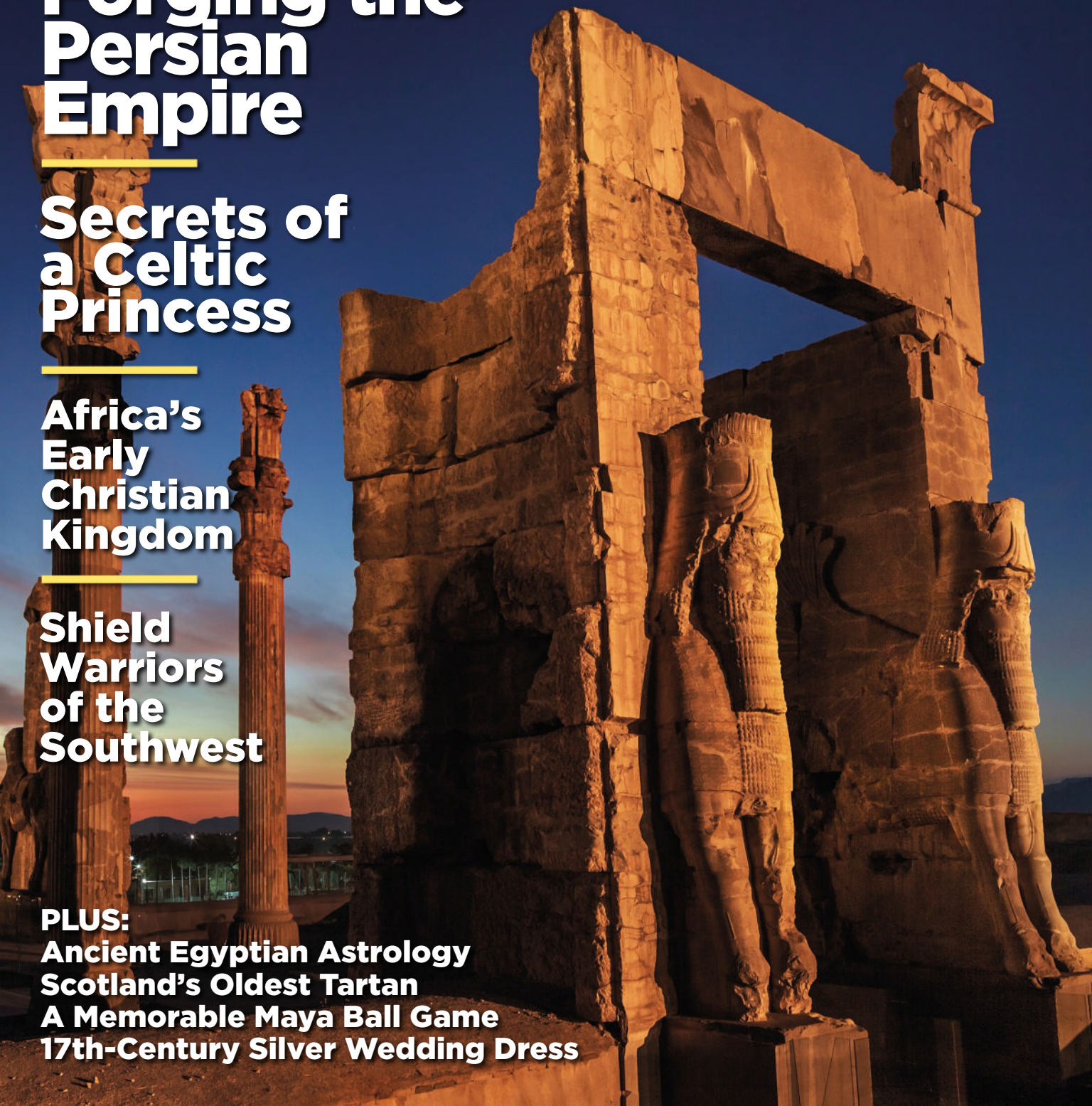
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CONTENTS



42 White House, Canyon del Muerto, Arizona

FEATURES

24 RISE OF THE PERSIAN PRINCES

In their grand capital Persepolis, Achaemenid rulers expressed their vision of a prosperous, multicultural empire

BY BRIDGET ALEX

32 AN ELEGANT ENIGMA

The luxurious possessions of a seventeenth-century woman continue to intrigue researchers a decade after they were retrieved from a shipwreck

BY JARRETT A. LOBELL

36 INSIDE A MAGNIFICENT CELTIC TOMB

New investigations of an Iron Age burial in France reveal the source of one woman's exceptional power

BY BENJAMIN LEONARD

42 DEFENDING THE CANYONLANDS

Rare shields from the American Southwest are a legacy of a turbulent time in Native history

BY ERIC A. POWELL

48 AFRICA'S MERCHANT KINGS

The early Christian kingdom of Aksum was at the heart of a great maritime trading network

BY JASON URBANUS

Cover: Winged, bearded bulls called *lamassu* adorn the Gate of All Nations in the Persian Achaemenid capital of Persepolis in modern-day Iran.

PHOTO: 123RF/MOHAMMAD NOURI

SACRED STONE OF THE SOUTHWEST IS ON THE BRINK OF EXTINCTION



Centuries ago, Persians, Tibetans and Mayans considered turquoise a gemstone of the heavens, believing the striking blue stones were sacred pieces of sky. Today, the rarest and most valuable turquoise is found in the American Southwest—but the future of the blue beauty is unclear.

On a recent trip to Tucson, we spoke with fourth generation turquoise traders who explained that less than five percent of turquoise mined worldwide can be set into jewelry and only about twenty mines in the Southwest supply gem-quality turquoise. Once a thriving industry, many Southwest mines have run dry and are now closed.

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DEPARTMENTS

4 EDITOR'S LETTER

6 FROM THE PRESIDENT

8 LETTERS

Enduring design, Peruvian child sacrifice, and an Egyptian official's connections

9 DIGS & DISCOVERIES

Ancient Ohio earthworks, Egypt's zodiac temple, Maya ball game marker, oldest Scottish tartan, and unearthing a Sumerian palace

20 OFF THE GRID

Cuicuilco, Mexico

22 AROUND THE WORLD

Bolivia's mystery sites, Viking visits to North America, a Roman doctor's high-end instruments, DNA from a Paleolithic pendant, and tailoring clothes 40,000 years ago

68 ARTIFACT

Ode to Odin

LETTER FROM PATAGONIA

55 SURVIVING A WINDSWEEP LAND

For 13,000 years, hunter-gatherers thrived in some of the world's harshest environments

BY MATT STIRN

ARCHAEOLOGY.ORG

■ **MORE FROM THE ISSUE** To see more images from this issue's Digs & Discoveries, go to archaeology.org/ja23digs. To watch a drone video of the site of Pañamarca in northwestern Peru, go to archaeology.org/panamarca. For a video about the archaeological work at Tablet Hill in Tello, Iraq, go to archaeology.org/tablethill. For more images of finds from the Palmwood Wreck, go to archaeology.org/palmwood.

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BRIDGING THE DISTANCES

You may be surprised at the extent to which the world of the past was bound together by what economists now refer to as a globalized economy, in which goods, services, labor, technology, and ideas travel across great distances to satisfy people's needs and desires. In this issue, you will read several articles that tell the story of ancient and early modern globalization. For example, you'll discover how a five-foot-tall bronze vessel made its way



from Italy to France in the mid-fifth century B.C., how a collection of golden ear pendants shows the influence of multiple empires, and how a busy Red Sea port enabled ancient Ethiopians to dominate the Horn of Africa and southern Arabia in the first millennium A.D.

One of the richest graves in all of Iron Age Europe—a huge burial mound belonging to a Celtic woman—was found in 1952 outside the town of Vix, in France's Burgundy region. It was filled with locally made objects, such as bronze pins, as well as a collection of spectacular artifacts imported from across the Mediterranean. "Inside a Magnificent Celtic Tomb" reveals how these extraordinary goods mark the woman's status as an important leader in her community and as a visionary who archaeologists believe acted as a channel between the earthly and spirit worlds.

Though separated by nearly 1,000 years, two ancient empires you will encounter relied for their success on wide-ranging trade networks that connected them to locales far beyond their own. For the Achaemenids of ancient Iran, this meant importing laborers, raw materials, and technology from lands they had conquered to build their splendid capital city of Persepolis. "Rise of the Persian Princes" explores how people from across the empire speaking many languages employed homegrown skills to construct a multicultural capital for the ages. For the Aksumites in what is now Ethiopia and Eritrea—who are the focus of "Africa's Merchant Kings"—it was not only goods that flowed into their empire, but new ideas as well, chief among them Christianity, which the Aksumite kings were among the earliest to adopt.

And, two collections of highly valuable artifacts discovered in the Netherlands—one of which was found at the bottom of the Wadden Sea—are evidence of how, in both the thirteenth and seventeenth centuries, the quest for luxury spurred traders to bring gold jewelry, Chinese porcelain, silk carpets, and one of the rarest and most lavish dresses to have survived from the past across oceans to the Low Countries.

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FROM THE PRESIDENT

THINKING ABOUT TRASH

Over the course of about a hundred years in the second and third centuries A.D., more than 50 million single-use ceramic amphoras carried some 1.5 billion gallons of olive oil to Rome. Their smashed remains created a landfill likely even larger than what survives today at Monte Testaccio in Rome, a mound more than half a mile in circumference and 115 feet tall. (See “Trash Talk,” March/April 2009, at archaeology.org/testaccio.) Sometimes called the city’s “eighth hill,” Monte Testaccio is a boon for archaeologists who study production and consumption, but the Romans may have realized their system was untenable. They made increasing use of crushed and even whole amphoras as fill in concrete construction, and the presence of recycled jars on Roman shipwrecks suggests a change in their thinking about trash.



Today, the challenge of single-use containers comes from plastic rather than pottery. According to earthday.org, residents of the United States purchase approximately 50 billion plastic water bottles and dispose of around 25 billion plastic foam cups per year. Some five trillion plastic bags are produced worldwide annually. The majority are dumped in landfills, but 14 million tons of plastic ends up in our oceans each year. During my archaeological surveys of anchorages and harbors used for millennia in the Mediterranean, we continue to see large quantities of water bottles, fishing gear, and other personal and industrial plastics layered on top of ancient and historic remains. And the quantities are ever increasing.

By working alongside naturalists, environmentalists, policymakers, and local communities, professional archaeologists can engage the public with the stories of discarded objects—from mushroom-rimmed Hellenistic amphoras to Pez dispensers in the form of Nintendo’s mushroom-headed Toad. In the 1970s, William Rathje and his students from the University of Arizona began the Garbage Project, an exploration of modern trash through archaeological methods. More recently, John Schofield and Estelle Praet, in collaboration with the Galapagos Conservation Trust, have used archaeology to explore marine plastic pollution and build awareness of the impact of life in the “Plastic Age.” Preservationist Enzo Suma has called attention to the problem of plastics on Italian beaches through Instagram (@archeoplastica), where he documents bottles, balls, and brushes found alongside sand and seashells.

Discarded objects are the mainstay of archaeological research, and they ask all of us to consider the daily impact of our lives on the landscape. As we head into the field this summer, my team will consider not only what we can learn about the past from its trash, but how we can minimize our own environmental footprint—while asking ourselves what stories our plastics leave for the future.

The AIA supports archaeological fieldwork in the Mediterranean and around the globe. Learn more at archaeological.org/programs/professionals/.

Elizabeth S. Greene

President, Archaeological Institute of America

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FROM OUR READERS

SKILLED PRACTITIONERS

I am amazed how often archaeology shows us how people living millennia ago were skilled innovators and craftsmen whose solutions have persisted to this day. Need a blanket repaired? Sew it up with a needle. Rodents eating your food? Store it in a durable pot. Keep the chill out with buttoned garments. Throughout the ages, people typically met their basic needs in ways familiar to readers today.

Observe the lowly button pictured in the article “German Wishing Well,” (May/June 2023). The design of buttons on dress shirts in my closet is basically unchanged from the one pictured. The big difference is that the button from the well was hand-shaped and drilled with two tiny holes at sharp angles. It is very difficult to grind tiny circles and drill at an angle. Such artistry took considerable time, tools, skills, and innovation. This button’s 4,000 years of elegant simplicity, functionality, and durability outshine today’s mass-produced \$1,000 smartphones, which become obsolete in just four years.

Blair L. Faulk
Bulloch County, GA

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RIGHT MAN FOR THE JOB

I’ve had a long interest in Udjahorresnet (“The Man in the Middle,” May/June 2023) and I would like to pull together some threads mentioned or implied in your fine article. Udjahorresnet was an Egyptian insider with a cosmopolitan sensibility. His titles speak to his internal and external functions, placing his dynamism at the nexus of religious, political, and economic affairs. As regards his title “overseer of the royal *kbmw* fleet,” I assert that we should also see him as an entrepreneur whose title may well encompass a military side but seems tilted to one with commercial interests and acumen. We may posit that Udjahorresnet’s appeal to the Persians likely included the attractiveness of his mercantile assets and lucrative connections outside Egypt.

Craig Miller
Conway, SC

PLEASURE READING

I enjoy your magazine so much and read it cover to cover when it arrives. The amazing worlds that are being opened up with every issue are just a magical experience. Thanks for the fine work.

Cindy Zembryki
Shinglehouse, PA

EASING THEIR JOURNEY

In “Peru’s Great Urban Experiment,” (May/June 2023), Jarrett Lobell describes the ritual sacrifice of 451 children and 36 adults, with no evidence of restraint

or blows to the head. Rather, the people were killed with “a single horizontal cut through the sternum.” Such a killing would not have been endured calmly, even if the victims were indoctrinated to believe in its ritual importance or honor, or that death would be followed by rebirth in “a better life” or place of honor. Is there evidence for the use of tranquilizing substances or hallucinogens to pacify the victims before sacrifice?

Joel Achtenberg
St. Louis, MO

Biological anthropologist John Verano replies:

You ask a good question about how the sacrificial victims might have reacted. Actually, only the children had their chests cut open—the adults did not show skeletal evidence of how they were dispatched, but a likely possibility is that they were strangled with a cloth or cord ligature—a gentler method, I would imagine—although none were found with a ligature still in place. The children would have been more easily controlled than the adults, as most were quite young. However, we did find two jars of a type used to produce and serve chicha, a corn beer commonly consumed in Andean rituals and celebrations, and the alcohol would have had a calming effect. No evidence of other drugs like hallucinogens was identified, although this would be a difficult thing to detect.



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DIGS & DISCOVERIES

EGYPTIAN ASTROLOGY, SCOTLAND'S OLDEST TARTAN, VIKING SUPPORT ANIMALS...AND MUCH MORE

A NEW DAY FOR THE ANCESTORS' MOUNDS

In fall 2007, Glenna Wallace, chief of the Eastern Shawnee Tribe of Oklahoma, visited the Octagon Earthworks in the central Ohio city of Newark while attending a lecture series at the Ohio State University in nearby Columbus. Wallace is a seasoned world traveler, but she was nevertheless astounded by the Native American mounds, which were built 2,000 years ago by her people's ancestors. The eight walls of the Octagon Earthworks' namesake structure each measure five to six feet high and about 570 feet long. The Octagon Earthworks are part of the Newark Earthworks, the largest known set of earthworks that include circular, square, and octagonal enclosures. The mounds' positions correspond to lunar movements, and the structures align with points at which the moon rises and sets over the course of the 18.6-year lunar cycle.

Tempering Wallace's elation that day was the reception she received as she proceeded across the golf course where the mounds are situated.irate golfers made it clear that she wasn't welcome on the grounds, which, under a decades-

old arrangement with the state, were open only on rare occasions to visitors interested in the earthworks. "I was just totally astounded, amazed, disappointed, hurt, all within five minutes," Wallace says.

The Newark Earthworks—which are a National Historic Landmark and Ohio's official prehistoric monument—are part of the larger Hopewell Ceremonial Earthworks complex, which encompasses other sites including the Fort Ancient Earthworks in southwestern Ohio and five earthworks in Chillicothe in southern Ohio. Combined, they represent the largest concentration of ancient Native American monumental landscapes in North America. Their creators are known as the Hopewell people, although this designation doesn't reflect what the builders called themselves, which is unknown. The Hopewell are the ancestors of a number of federally recognized tribes in Ohio—including the Chippewa, Delaware, Kickapoo, Miami, Ottawa, Peoria, Potawatomi, Seneca, Shawnee, and Wyandot—says Alex Wesaw, a citizen of the Pokagon Band of Potawatomi and director of Ameri-



Circle, Octagon Earthworks, Newark, Ohio



Octagon Earthworks, Newark, Ohio



Octagon Earthworks, Newark, Ohio

can Indian relations at the Ohio History Connection, the state's historical society.

The modern history of the Octagon Earthworks reflects changing attitudes toward such monumental Indigenous structures in the United States. Efforts to protect the earthworks began in 1892, when voters in Licking County, where they are located, approved a tax increase to provide for their preservation. Between then and 1908, the site was used as a state militia encampment. In 1911, the area was developed as a golf course, and the state leased the 134-acre property to Moundbuilders Country Club beginning in the 1930s. Although the lease wasn't set to expire until 2078, the state sued several years ago to reclaim the property by eminent domain. Thanks to a ruling in December 2022 by the Ohio Supreme Court, access to the earthworks is now set to expand dramatically. After a trial to determine

how much the state must compensate the country club, control of the site will be permanently transferred to the Ohio History Connection.

Archaeologists still have many questions about the Octagon Earthworks, including how often ancient people visited them, how the Hopewell created such precise astronomical alignments without sophisticated surveying instruments, and whether they built wooden structures there. All future projects designed to explore these and other questions at the site will have to be approved by Native American representatives. "People need to write with us, not about us," says Ben Barnes, chief of the Shawnee Tribe of Oklahoma. "Don't work on us—find out what work we want done and what we can do collaboratively."

As the state and its Native American partners plan for the future of the Octagon Earthworks, relandscaping

the site to remove traces of the golf course should be a top priority, says Diane Hunter, a citizen of the Miami Tribe of Oklahoma and its tribal historic preservation officer. She hopes that more research into the earthworks' relationship to the skies will be a priority. "With full access to the site," Hunter says, "there may be a lot more to learn about how it's aligned

to the sun, the moon, the stars."

The precision with which the Hopewell built their mounds has long amazed archaeologists. For example, the Octagon Earthworks' Observatory Circle has the same area as a nearby square enclosure. Observatory Circle also has the same diameter—1,054 feet—as two circles at other Hopewell sites in Ohio. Wallace says the geometric and astronomical expertise of those who designed and built these structures two millennia ago obliterates forever the idea that Native Americans lacked sophisticated scientific and engineering knowledge. "The Octagon Earthworks is our history," she says. "It's our culture. It's our reverence for our ancestors. We stand on their shoulders: Whatever progress we have made, we wouldn't have been able to do it had it not been for our ancestors."

—ANDREW WELSH-HUGGINS

A GAME TO REMEMBER

A carved stone marker was recently found near an entrance to the Casa Colorada building complex in the ancient city of Chichén Itzá in Mexico's Yucatán Peninsula. The carving depicts two men playing the Maya ball game, and contains the first complete inscription found at the site in 20 years. The circular marker, which was discovered by archaeologist Lizbeth Beatriz Mendicuti Pérez of Mexico's National Institute of Anthropology and History, is nearly 13



Stone marker, Chichén Itzá, Mexico

inches in diameter and weighs more than 85 pounds. The inscription includes the date 12 Eb 10 Cumku in the Maya ritual calendar, which corresponds to a particular day in A.D. 894. Mendicuti Pérez believes that the marker commemorates a game played on that date at the Casa Colorada complex. The ball game was played for many reasons, including to celebrate important events. What that event may have been in this case remains unknown.

—ZACH ZORICH

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ANCIENT EGYPTIAN ASTROLOGY

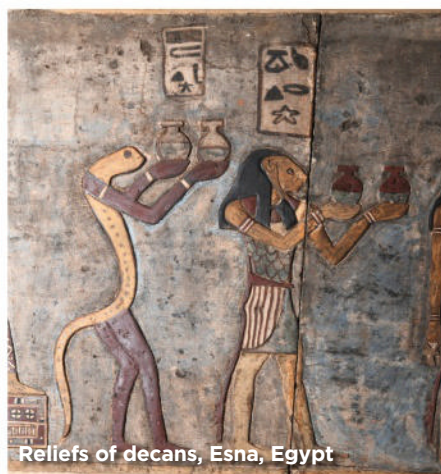
For centuries, layers of soot have coated the ceilings and columns in the entrance hall of Egypt's Temple of Esna.

Now, an Egyptian-German team of researchers, led by Hisham El-Leithy of the Egyptian Ministry of Tourism and Antiquities and Christian Leitz of the University of Tübingen, is restoring the temple's vibrant painted reliefs to their original brilliance. The paintings mostly date to the first to third century A.D. One of the hall's recently cleaned ceilings includes images of the planets Mars, Jupiter, and Saturn, as well as representations of decans, or stars and constellations that were used to measure time. It displays strange hybrid animal creatures, which are identified in accompanying inscriptions and may represent constellations.

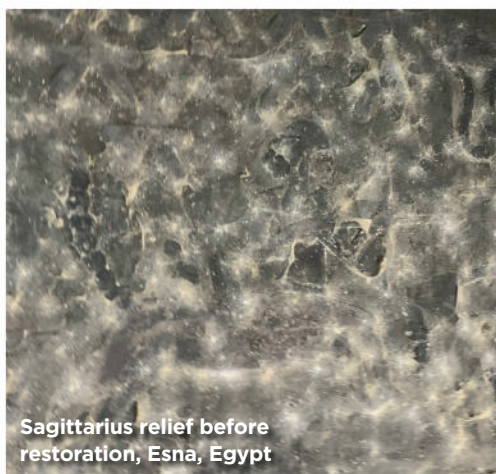
The ceiling also features depictions of the 12 signs of the zodiac.

The zodiac system was developed by the Babylonians in the Near East and was introduced to Egypt at the end of the fourth century B.C. During the Ptolemaic period (304–30 B.C.), Leitz explains, the signs became quite popular among Egyptians, who adorned their tombs with their birth signs and inscribed horoscopes on ostracans, broken pottery pieces used as writing surfaces. Nevertheless, the Esna zodiac is one of only three preserved in Egyptian temples. "It's astonishing because in a normal Egyptian temple, there isn't anything showing foreign influence," Leitz says. "This is a remarkable exception."

—BENJAMIN LEONARD



Reliefs of decans, Esna, Egypt



Sagittarius relief before restoration, Esna, Egypt



Sagittarius relief after restoration, Esna, Egypt

Temple of Esna, Esna, Egypt



Woolen tartan fabric



BOG TOGS

A piece of fabric found in a Highland peat bog in the early 1980s has now been determined to be the oldest example of true tartan ever located in Scotland. Tartan, which for centuries has been an important element in Scottish cultural identity, is distinguished from simpler check designs by its greater complexity of patterning and inclusion of more than two colors. To learn more about the woolen textile, which measures roughly 22 by 17 inches, the Scottish Tartans Authority (STA) commissioned several types of analysis. High-resolution microscopy detected a ground pattern of red and yellow with green overstripes. There is also a dark brown color, though this may be a product of the fleece's natural color. Chemical analysis,

Tartan fabric magnified 50 times



meanwhile, found no evidence of artificial dyes, which were first available in the mid-nineteenth century. Based on the fabric's rustic weave and inconsistencies in its pattern, Peter MacDonald, the STA's head of research and collections, suspected it likely dated to earlier than other surviving examples, the oldest of which was woven around 1700. "I had a feeling that this specimen was pre-1700," says MacDonald, "but whether that was 1690 or 690, I had no idea." Radiocarbon dating confirmed his impression, establishing that the cloth was likely produced in the first half of the sixteenth century, around 500 years ago. MacDonald next hopes to identify the breed of sheep whose wool was used to make the textile and where it was raised.

—DANIEL WEISS



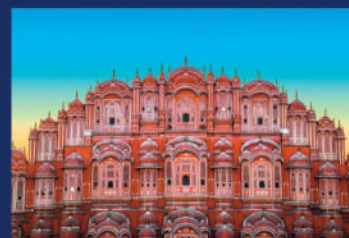
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UPDATE

TEMPLE TIMES TWO

A team led by archaeologist Jessica Ortiz Zevallos has returned to the Temple of the Painted Pillars at the site of Pañamarca in northwestern Peru, where they have discovered new well-preserved, brightly colored paintings. Several of the paintings, which were created by artists belonging to the Moche culture in the seventh century A.D., represent highly unusual figures and scenes. One such image is of a two-faced man who is shown both on the top and the bottom of a pillar. “A person with two faces has never been seen in Moche painting,” says Columbia University archaeologist Lisa Trever. “It’s unique and shows the artists playing with portraying the same person in two different moments.”

Another unusual scene includes the image of a woman who is commonly identified as a priestess based on her clothing and headdress. While she is usually portrayed holding a



Painted pillar,
Pañamarca, Peru



Painted pillar,
Pañamarca, Peru

goblet, in this case the woman grasps an ornate war club. She faces a man who holds an object that may be a *quipu*, the knotted string implement used by ancient Andean cultures to record numerical information. These scenes are adding to the growing evidence that the Moche should not be thought of as a homogeneous culture, says archaeologist Michele Koons of the Denver Museum of Nature

& Science. “There is a flexibility in what it means to be Moche,” she says, “and their expression of their culture was much more diverse than we have thought.”

—JARRETT A. LOBELL

To read the original article about the Temple of the Painted Pillars in Pañamarca, go to archaeology.org/paintedpillars. To see a drone video of the site, go to archaeology.org/panamarca.

VIKING SUPPORT ANIMALS

The warriors of the Viking Great Army who campaigned in Britain from A.D. 865 to 878 worshipped gods often associated with animal companions, such as Odin and his eight-legged horse Sleipnir. It seems that some of the army’s leaders may have made the voyage across the North Sea from Scandinavia



Stela depicting Odin's horse Sleipnir

with their own cherished animals as comrades. A team led by University of Durham archaeologist Tessi Loeffelmann discovered evidence of these travel arrangements while analyzing isotopes of the element strontium in cremated animal bones recovered from Norse burial mounds

near the site of the army’s A.D. 873–874 winter camp in Repton. Strontium is incorporated into bones and teeth from bedrock via food and water, leaving a distinctive trace of people’s and animals’ geographic origins. In the case of bones of a horse, a dog, and possibly a pig analyzed by Loeffelmann’s team, strontium isotopes showed that all three animals came from Scandinavia. They were likely brought to Britain by high-ranking members of the Viking Great Army. “These individuals knew when they were boarding the ships that they were going to have to fight and face dangerous situations,” says Loeffelmann. “The presence of these familiar animals could have been a source of comfort and strength.”

—ERIC A. POWELL

Horse bones

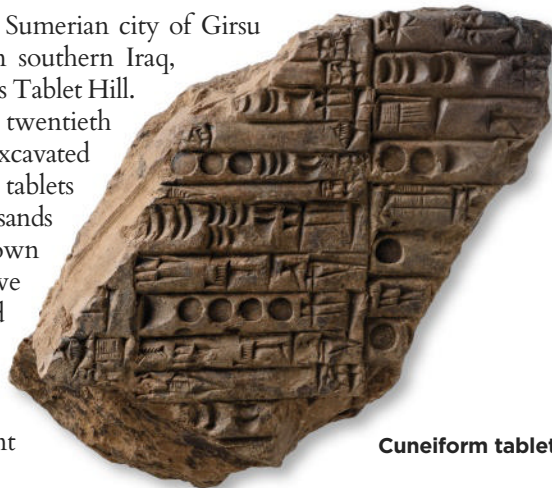


THE PALACE ON TABLET HILL

At the site of the ancient Sumerian city of Girsu in present-day Tello, in southern Iraq, stands a mound known as Tablet Hill.

In the late nineteenth and early twentieth centuries, French archaeologists excavated tens of thousands of cuneiform tablets there. Looters made off with thousands more. These tablets were known to have been the administrative archives of a palace that had never been located. Given the extent of the looting that had taken place at the site, many believed there were no significant archaeological remnants left.

Based on his experience excavating a nearby temple to the warrior god Ningirsu, however, British Museum archaeologist Sebastien Rey had a hunch that the earlier archaeologists' spoil heaps might have protected portions of the site. "We tend to say that the big sites excavated in the nineteenth century have been excavated away, that there's nothing left to find," he says. "But there are many treasures that we can still discover—and it's our responsibility to go back to these sites with the technologies that we have to salvage what can be salvaged."



Cuneiform tablet

Palace wall, Tello, Iraq



Using drone photography, a team of British and Iraqi archaeologists led by Rey identified potential structures at Tablet Hill. They then dug a single trench across the mound, revealing a section of palace wall dating to the beginning of the second millennium B.C., around the time the city was abandoned. A few feet deeper, at the other end of the trench, they identified a portion of wall dating to the mid-third millennium B.C. The team also excavated and conserved more than 200 additional cuneiform tablets. Rey suspects that, like many large ancient Mesopotamian mudbrick structures, the palace was heavily renovated or even rebuilt over the centuries.

—DANIEL WEISS

To see a video about the archaeological work at Tablet Hill, go to archaeology.org/tablethill.

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A SURPRISE IN SUDAN



Inscribed stone blocks, Old Dongola, Sudan

Beneath the ruins of the medieval village of Old Dongola, on the Nile in northern Sudan, a team from the University of Warsaw was surprised to find stone blocks that may date to the time of the pharaoh Taharqo (reigned ca. 690–664 B.C.). “Despite nearly sixty years of archaeological research in Old Dongola, no traces from such an early period had been encountered,” says Egyptologist Dawid Wiczorek.

campaign that may have included a temple to Amun-Ra in Old Dongola, says Wiczorek, and the blocks may have been part of this temple. He says it is possible that the blocks were transported from elsewhere between the fifth and ninth centuries A.D. and used to build some of the earliest Christian churches in the town.

—ZACH ZORICH

BULLISH ON THE STORM GOD

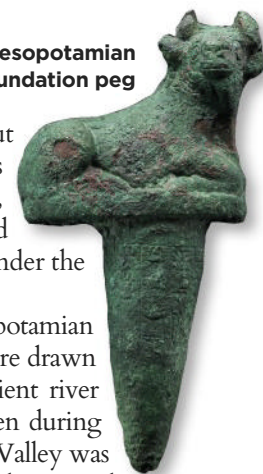


Toprakhisar Höyük, Turkey

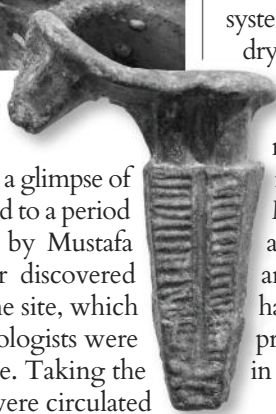
In southern Turkey’s Amuq Valley, a curious one-inch-tall lead figurine unearthed at a rural Bronze Age site is giving archaeologists a glimpse of how villagers living around 2000 B.C. responded to a period marked by increasing drought. A team led by Mustafa Kemal University archaeologist Murat Akar discovered the figurine while excavating a grain silo at the site, which is known as Toprakhisar Höyük. The archaeologists were instantly struck by the object’s odd appearance. Taking the form of a bull, it resembles lead trinkets that were circulated

by traders in Anatolia at that time. But it also bears a likeness to larger artifacts from Mesopotamia called foundation pegs, conical or nail-shaped objects inscribed with dedications to the gods and placed under the walls of important buildings.

Akar thinks the hybrid Anatolian–Mesopotamian figurine was made by newcomers who were drawn to Toprakhisar Höyük by the area’s resilient river system, which would have made it a haven during dry periods. “We believe that the Amuq Valley was a refugee zone at the beginning of the second millennium B.C.,” he says. “Beliefs, ideas, customs, and new cult and ritual habits were likely transmitted to the region through these population movements from northern Mesopotamia.” Bulls came to be closely associated with the area’s various storm god cults, which rose to prominence around the time the object was placed in the grain silo. Perhaps it was left there by people who sought the storm god’s protection from further hardship while they built a new life in a foreign land.



Mesopotamian foundation peg



Lead bull figurine

—ERIC A. POWELL

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HYBRID HOARD

A hoard of silver and gold items buried in the Netherlands 800 years ago—possibly for safekeeping during a time of war—was recovered by a licensed metal detectorist. The hoard, which was found in the small city of Hoogwoud in the West Friesland region, contained four crescent-shaped gold ear pendants, two strips of gold leaf, and 39 hammered silver coins. According to Annemarieke Willemsen, curator of medieval collections at the Dutch National Museum of Antiquities, the pendants can be dated to the first half of the eleventh century based on their style, technique, and similarity to finds from Mainz, Germany. The fingernail-size coins, however, were all minted in the first half of the thirteenth century, the most recent in 1248. Willemsen says the items were probably all buried together shortly after

this date, meaning the jewelry was already two centuries old at the time. This was a period of sustained conflict between local Frisians and the rulers of the County of Holland, which may explain why the owner of the valuables chose to bury them.

To Willemsen, the ear pendants, which measure two inches by 1.5 inches, are the most interesting part of the find. She notes that they combine a shape that was common in the Byzantine world, centered in Constantinople (modern Istanbul); crafting techniques of the Holy Roman Empire, centered in Germany; and decoration typical of Scandinavia. “They are hybrid in the best sense of the word,” she says. “If you wore this jewelry in any of those places, in any of those cultures, you would be recognized as someone of high status.”

—DANIEL WEISS



BIG GAME HUNTING

Archaeologists rarely unearth the remains of large predators such as leopards, lions, and bears. But University of Haifa archaeologist Ron Shimelmritz and his colleagues wondered if, by looking at a large number of sites over thousands of years, they could identify evidence showing that ancient people hunted these fearsome creatures. The team reviewed reports of animal remains discovered at sites in the southern Levant dating from 25,000 to 2,500 years ago. They found that the frequency at which leopard, lion, and bear skeletal remains were found changed over time. Leopard bones were relatively numerous at sites dating to the Neolithic period (9700–4700 B.C.), but were virtually nonexistent in later Copper and Bronze Age (4700–1200 B.C.) settlements, where there were more bear bones and many lion bones. “If these bones were the result of

random encounters with predators,” says Shimelmritz, “then you wouldn’t expect to see a pattern.”

The researchers hypothesize that the shift reflects the changing symbolic importance of large predators over time. As people first came together in permanent settlements in the Neolithic period, the solitary, nocturnal leopard, a symbol of the dangerous natural world, may have acquired special significance. Later, as societies grew more complex and social hierarchies developed in the Copper and Bronze Ages, the lion and the bear may have become more important as symbols of authority.

The team found that lion head and toe bones were particularly well represented at sites dating to the Bronze Age (3700–1200 B.C.), leading them to speculate that the bones are what was left of pelts. “Wearing pelts allowed people to prolong the symbolic value of the lion hunt for years,” says Shimelmritz.

—ERIC A. POWELL



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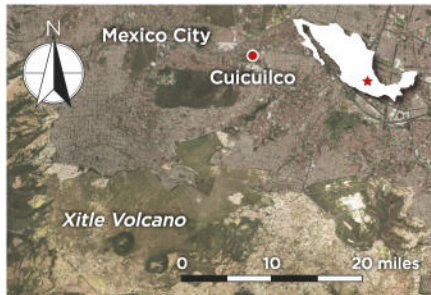
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CUICUILCO, MEXICO



One of Mexico's most important archaeological sites is hidden in plain view in the Tlalpan borough of southern Mexico City. Few people make the 12-mile drive from downtown to Cuicuilco, but the site's surprising and enigmatic history makes it well worth the trip. "Cuicuilco is central Mexico's first true city," says Boston University archaeologist David Carballo.

Cuicuilco was settled around 800 B.C. by early farmers who were already living in sedentary village communities. Over the next millennium, it grew until it was home to a population of 20,000 who thrived in this relatively lush area by channeling water to irrigate their land and for use in domestic and religious spaces. "Cuicuilco may be the best example in the center of Mesoamerica of a complex early society with a well-organized hydraulic agricultural system," says

archaeologist Alejandro Pastrana of Mexico's National Institute of Anthropology and History.

It is, however, impossible to say what most of ancient Cuicuilco looked like. In about A.D. 250, it, along with a surrounding area of some 50 square miles, was buried by the eruption of the Xitle Volcano, in some places to a depth of as much as 30 feet. The basaltic lava field, today known as the Pedregal de San Angel, covers most of the ancient city, and what is not encased in lava and has not been excavated lies under the modern neighborhood. The eruption forced Cuicuilco's residents to abandon their city and move north, where they encountered a great culture on the rise in the burgeoning metropolis of Teotihuacan, which had been founded around 100 B.C. "People from Cuicuilco did not establish Teotihuacan, as has been proposed," says Pastrana.

THE SITE

The first excavations at Cuicuilco took place between 1922 and 1925—aided by explosives to break up

Side view, round pyramid, Cuicuilco, Mexico



Figurines



the lava. At the time, the only visible ancient structure was the top of the site's unusual round pyramid, which dates to the fifth century B.C. and is one of the oldest monumental structures in Mesoamerica. Some exploration took place prior to the construction of the Olympic village for the 1968 games, salvage excavations were undertaken in the 1990s, and Pastrana is currently conducting limited work. As of now, the 85-foot-tall, 360-foot-wide pyramid, which is dedicated to a god of fire who is also associated with volcanoes, has been completely excavated, as have two other temples and what may be a large civic complex. All are usually open to visitors.

WHILE YOU'RE THERE

It's best to take a taxi, which is inexpensive in Mexico City, to Cuicuilco. On the way, stop at the University Olympic Stadium, where events of the 1968 summer games were held. It is decorated with a mural by Mexican artist Diego Rivera depicting, among other subjects, a Spanish man, an Indigenous woman, and the Mesoamerican deity Quetzalcoatl. Here, Dick Fosbury won gold in the high jump, debuting his innovative flop technique, and athletes Tommie Smith and John Carlos bent their heads and raised their black-gloved fists during the 200-meter race medal ceremony.



Round pyramid, Cuicuilco, Mexico



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GREENLAND: When Norse settlers arrived in Greenland in the 10th century A.D., they needed wood for fuel, to make tools, and to build ships and houses.

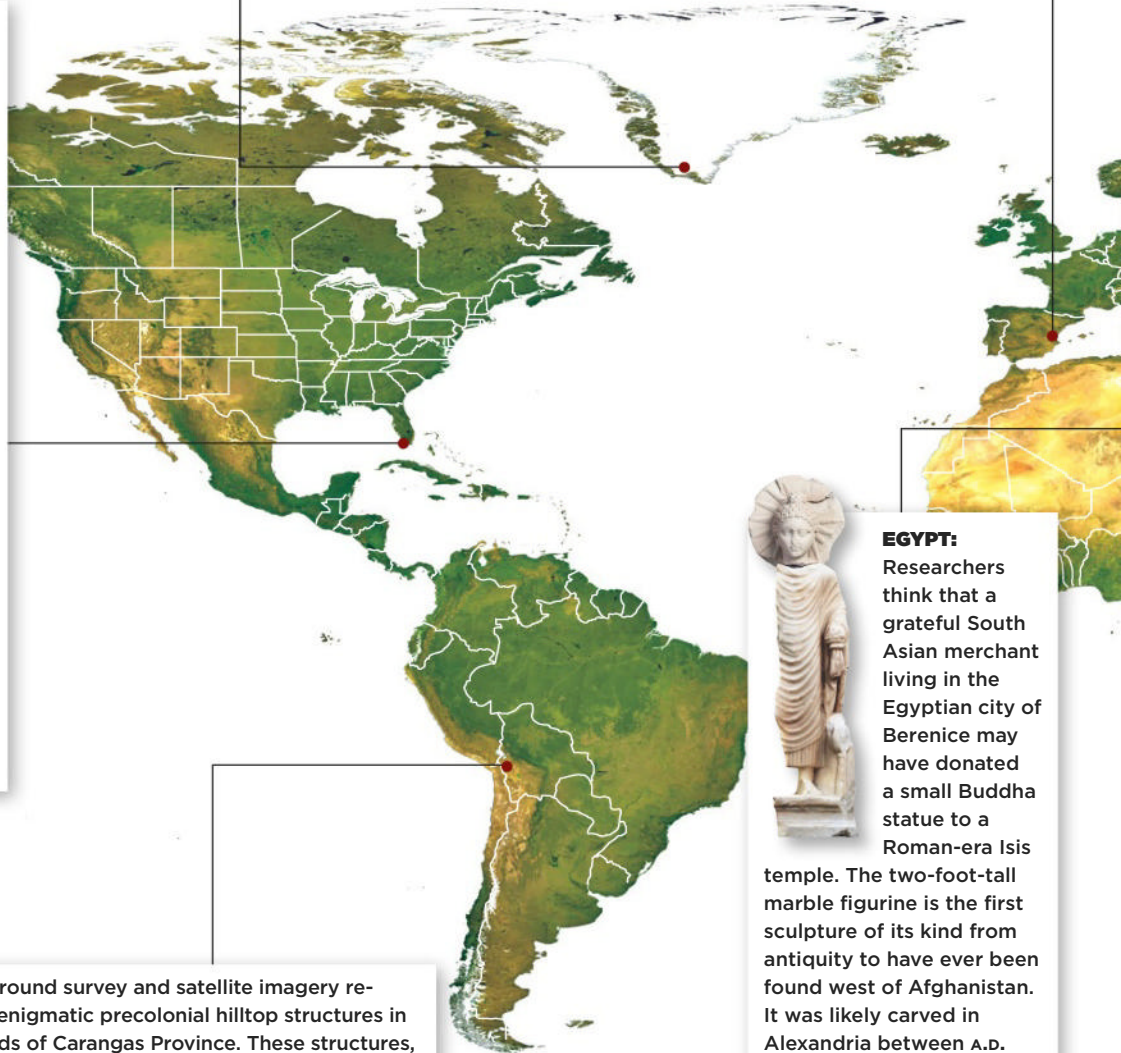
While the island has small native trees and a supply of driftwood, these sources didn't always meet the demands of high-status colonists. Analysis of wood fragments found at the farmstead of Igaliku suggests that from the 11th to 15th century, wealthier Norse Greenlanders journeyed to North America to procure robust hemlock and jack pine logs for construction projects—further evidence that Vikings visited the continent centuries before Columbus.



SPAIN: No one is exactly sure when people began wearing clothing, but a new discovery at a site in Catalonia suggests that the first modern humans in Europe were already tailoring their garments 40,000 years ago. A recently discovered animal bone with a series of small indentations may have been used as a punchboard when making holes in animal hides. It is the oldest known tool of its kind. The pieces of perforated leather could then be sewn together to create better-fitting apparel.



FLORIDA: Divers located a 19th-century quarantine hospital and a cemetery on a submerged island in Dry Tortugas National Park, 70 miles west of Key West. The building was used between 1890 and 1900 to house patients suffering from yellow fever. The burial ground served as the final resting place for soldiers and civilians stationed at nearby Fort Jefferson. These included a laborer named John Greer, whose recently identified headstone records that he died at the fort on November 5, 1861.



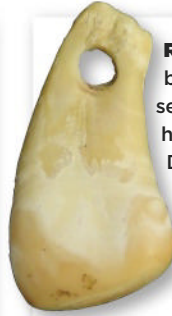
EGYPT: Researchers think that a grateful South Asian merchant living in the Egyptian city of Berenice may have donated a small Buddha statue to a Roman-era Isis temple. The two-foot-tall marble figurine is the first sculpture of its kind from antiquity to have ever been found west of Afghanistan. It was likely carved in Alexandria between A.D. 90 and 140 and depicts the Buddha—who lived on the Indian subcontinent at least 2,300 years ago—with a halo of sun rays around his head symbolizing his radiant mind.



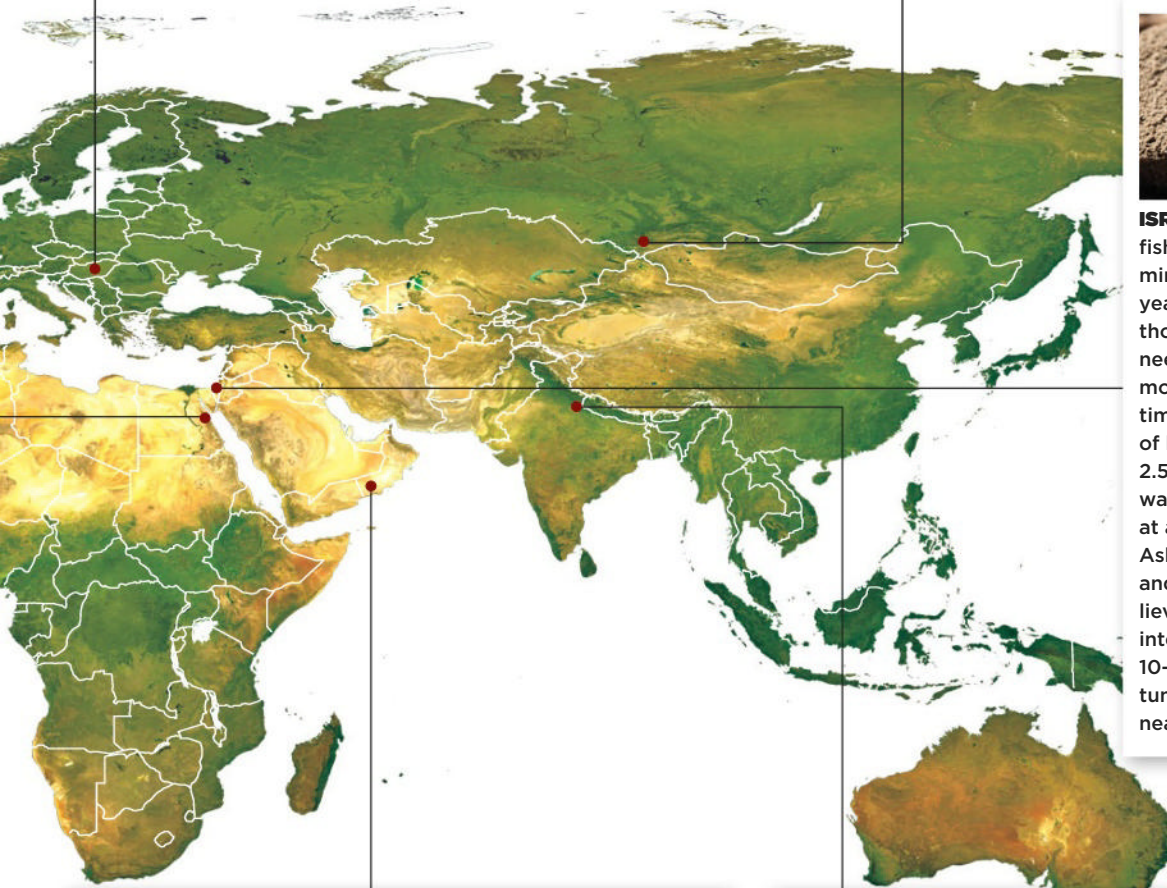
BOLIVIA: Ground survey and satellite imagery revealed 135 enigmatic precolonial hilltop structures in the highlands of Carangas Province. These structures, which date to between 1250 and 1600, typically consist of concentric walls built on terraces around the hill's summit. The largest one, named Waskiri, is 460 feet in diameter. The enclosures may have been used for ceremonies and ritual gatherings that appealed to local Andean divinities to ensure favorable agricultural conditions in the region's harsh climate.



HUNGARY: A Roman doctor traveling far from home 2,000 years ago was buried with his specialized instruments. A wooden box found at the physician's feet contained an array of high-quality copper-alloy and silver medical tools, including needles, tweezers, forceps, and scalpels with replaceable blades. Experts believe the man had been trained in the Roman Empire but ventured beyond its borders to treat someone when he died unexpectedly and was interred near present-day Jászberény.



RUSSIA: For the first time, a Paleolithic artifact has been directly associated with a specific person. Researchers used a groundbreaking technique to extract human DNA left on a deer tooth pendant found in Denisova Cave in Siberia. They determined that the piece of jewelry was made or worn by a woman who lived between 25,000 and 19,000 years ago. She was genetically related to a group of hunter-gathers known as the Ancient North Eurasians, who typically lived farther east at that time.



ISRAEL: When a group of fishers saw sharks swimming around them 6,000 years ago, they must have thought, "We're going to need a bigger hook!" While most fishing hooks of the time were small and made of bone, an unusually large 2.5-inch-long copper hook was recently discovered at a Copper Age site in Ashkelon. Due to its size and material, scholars believe that it may have been intended to catch 6- to 10-foot-long sharks or large tuna in eastern Mediterranean waters.



OMAN: An archaeological expedition into the under-explored deserts of Dhofar and Duqm has made a wide range of surprising finds. The discoveries include hand axes fashioned hundreds of thou-

sands of years ago, eggshells of extinct ostriches, Neolithic tombs, and more than 500 rock engravings depicting camels, horses, and turtles. The team also located a 2,000-year-old megalithic monument known as a trilithon that features a cluster of large standing stones. Its function remains unknown.



INDIA: The Indus Valley civilization is known for its megacities and is considered one of the world's earliest advanced cultures. It flourished between 2600 and 1900 B.C., but the causes of its collapse have been a mystery. Now, though, trace element analysis of stalagmites in a Himalayan cave indicates that, starting around 4,200 years ago, the region suffered a series of major droughts over the course of 200 years. These dry periods may have transformed the existing social structure, gradually forcing populations out of urban centers and into dispersed rural settlements.

The Apadana, which was used as a gathering hall for receptions, was the largest building in Persepolis. A relief on the stairway includes depictions of delegates to the Achaemenid royal court (left), a multilingual inscription (center) saying that King Xerxes completed the building, and an image of a lion (right) attacking a bull.

Rise of the Persian Princes

In their grand capital Persepolis, Achaemenid rulers expressed their vision of a prosperous, multicultural empire

By BRIDGET ALEX



As visitors to Persepolis, capital of the Persian Achaemenid Empire, entered the city, they would approach a stone terrace on which a palatial precinct rose 40 feet above the fertile flatlands at the foot of Kuh-i-Rahmat, the Mountain of Mercy. Bearing gifts from their homelands—perhaps a metal chalice or a braying donkey—they would ascend 63 limestone steps, pivot on a landing, then climb another 48 steps to an imposing threshold known since antiquity as the Gate of All Nations. Flanking the four-story-tall gate were statues of *lamassu*, winged bulls with human heads and curly beards.

The great city was founded by the Persian king Darius I around 518 B.C. in present-day Iran and construction continued for nearly 200 years. For the duration of its existence, the ever-expanding metropolis was a royal estate, a bustling construction site, and an urban center



that housed as many as 45,000 residents nourished by surrounding orchards and farmlands.

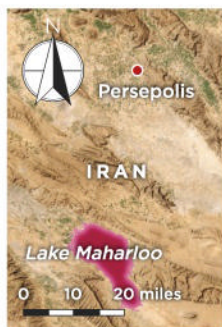
Glazed bricks adorned the entryway's interior, and two identical trilingual texts, inscribed in Old Persian, Elamite, and Babylonian, read: "I, Xerxes, the great king, king of kings, king of the countries possessing many kinds of people, king of this great earth far and wide, the son of Darius the king, the Achaemenid." Travelers would have continued through the gate onto the royal terrace, a massive 30-acre platform filled with spacious meeting halls and palaces where reliefs depicted kings receiving attendants and taming fierce creatures. The walls would have glowed from the hues of glazed tiles, murals, and inlaid gold, silver, and precious minerals. Painted with especially vibrant blues, Persepolis was an oasis that stood out from the hazy plains, says archaeologist Alexander Nagel of the Fashion Institute of Technology.

The terrace's largest building, called the Apadana, or Audience Palace, featured 72 columns and a central court that hosted up to 10,000 people during royal festivities. Along the building's staircases, reliefs portrayed Achaemenid guards and nobles ushering 23 delegations of different foreign peoples. Based on distinctive costumes and presents that are depicted in the procession, scholars have identified Bactrians with a two-humped camel, Ionians bearing cloth, Elamites offering daggers, and more. "Each of these parts of the empire was thought to contribute something," says Nagel, "but the heart of the empire was Persepolis."

The Achaemenid kings saw their realm as a cultural coalescence, and they showcased its diversity by creating a capital that integrated people, resources, and styles from their many conquered lands. To sustain such a place, they brought laborers skilled in their own traditions to the city. Building Persepolis required stonemasons, painters, lumberjacks, and gardeners. Organizing and boarding the workers necessitated managers, scribes, farmers, and cooks.

The air would have carried the odor of wet paint and brewing beer, as well as the aroma of tree resins, lit like scented candles for their fragrance. Over the din of lumber being chopped and limestone chiseled, people conversed in many languages. On the terrace, members of the royal family conferred in Old Persian, an Indo-European language that evolved into the Persian, or Farsi, spoken by more than 100 million people today. Diplomats used Aramaic, a Semitic language, the empire's administrative and legal lingua franca. Scribes wrote on clay tablets in Old Persian, Aramaic, Elamite, and other languages. Meanwhile, below the terrace, skilled bricklayers spoke the Babylonian dialect of Akkadian, woodworkers gabbed in Egyptian, and others chatted in their own tongues.

Researchers are just beginning to understand the lives of these workers who toiled for the palace and



mented by finds from excavations in the urban areas below the royal terrace, as well as by paleoenvironmental research that shows how the Achaemenids transformed the surrounding environment into a vision of their empire in miniature. "The new evidence is allowing scholars to understand how, for good and for bad, the empire really transformed peoples' lives and the landscape," says Wouter Henkelman, a professor of Elamite and Achaemenid studies at the École Pratique des Hautes Études. "We're now building a dossier that is incredible in richness and detail."

REIGN DATES

Cyrus II
(Cyrus the Great)

559–530 B.C.

Cambyses II

530–522 B.C.

Darius I

521–486 B.C.

Xerxes

486–465 B.C.

Artaxerxes I

465–424 B.C.

Darius II

423–405 B.C.

Artaxerxes II

405–359 B.C.

Artaxerxes III

358–338 B.C.

Artaxerxes IV

338–336 B.C.

Darius III

336–330 B.C.

BEFORE THE ACHAEMENIDS, other imperialistic powers such as the Neo-Assyrians and the Elamites had conquered vast swaths of southwest Asia. There were also the empires of the Babylonians, farmers and city-dwellers of southern Mesopotamia, and the Medes, who were centered in the Zagros Mountain region. But the Achaemenids, an ethnically Persian dynasty, created the largest empire the world had yet known, starting from a stronghold in southwest Iran in the mid-sixth century B.C.

The first great Achaemenid king, Cyrus II, was the son of a Persian king and a Median princess. In 550 B.C., nine years after ascending to the Persian throne, Cyrus II conquered Media, unifying the lands of his maternal and paternal lines. He took Lydia in the 540s and Babylonia in 539 B.C., pursuing a campaign of conquering and absorbing other kingdoms that continued under his successors. At its greatest extent, under Darius I, the empire spanned west to the Aegean Sea, east to the Indus River, south into Egypt, and north to the Caucasus Mountains and Central Asia. "The Achaemenid Empire had a huge wealth of different ethnicities, religious systems, and cultural systems within this single

overriding political entity on a scale not previously achieved or aspired to by any imperial formation,” says University of Reading archaeologist Roger Matthews.

To control this multiethnic expanse, the Achaemenid kings established more than two dozen provinces, or satrapies, run by local governors called satraps, who ensured that residents paid their taxes, fulfilled military and labor obligations, and followed royal decrees. Nevertheless, the provinces enjoyed considerable freedom to maintain their cultural and religious practices. Matthews says that the Achaemenids established “a policy of essentially letting people be, while still ruling them, organizing their lives, and demanding certain things from them.”

Satraps also commandeered labor and resources to construct cities that incorporated styles from across the empire. For example, the typical building plan for royal halls, which featured large open spaces with rows of tall columns, was likely adopted from buildings in the northern highland satrapies of Media and Armenia. Using this blueprint, the Achaemenids built at least 17 grand halls in various cities. For brickwork, the Achaemenids borrowed from the Babylonians. Colors that

materials the Achaemenids used. The texts mention timber from Lebanon, gold from Lydia and Bactria, precious stones from Sogdia, silver and ebony from Egypt, ivory from Nubia and India, and stone columns from Elam. The workers, too, hailed from faraway lands. There were Babylonian bricklayers, Median and Egyptian goldsmiths, stonemasons from Ionia and Sardis, and woodworkers from Sardis and Egypt.

The Achaemenids’ tendency to borrow was remarked upon, most notably by the Greeks, who described the practice with disdain. The fifth-century B.C. Greek historian Herodotus writes, “There is no nation which so readily adopts foreign customs as the Persians. Thus, they have taken the dress of the Medes, considering it superior to their own; and in war they wear the Egyptian breastplate. As soon as they hear of any luxury, they instantly make it their own.”

But modern scholars see political savvy underlying the Achaemenids’ strategy. “If you embrace another culture’s traditions, then you have a better chance of ruling them,” says Nagel. “That’s why you find so many influences from other cultures in Persepolis. The Persian kings really wanted to see



A relief that likely decorated a wall of the Apadana shows a seated Achaemenid king grasping a lotus flower and a royal scepter. He is flanked by his heir (directly behind throne), two incense burners, and guards and attendants dressed in Persian and Median costumes.

adorned pillars and walls were inspired by pigments invented in Egypt. And the lamassu were adapted from Assyrian and Babylonian iconography. “They put it all together and made it Persian art,” Zehbari says, creating an amalgam that represented the empire’s diverse population. Though few could travel to all the far-flung Achaemenid lands, visitors to the Persian capital could still experience the empire’s reach.

Indeed, the Persian kings proudly proclaimed this to be the case. A collection of texts known as the Susa Foundation Characters found at Susa, a city in southwest Iran that was also built by Darius I, describes the origins of the building and decorative

themselves as peacemakers.” Toward this goal, they originated at least one artistic novelty for the region: creating carved reliefs with peaceful scenes. Instead of violent battles featuring kings vanquishing enemies, as was common in Assyrian carvings, the walls of Achaemenid cities including Persepolis are covered with tableaux in which people stand together, relaxed and chatting, holding hands or touching a companion’s shoulder.

THE FIRST LARGE-SCALE scientific excavations in Persepolis took place in the 1930s, led by Ernst Herzfeld and later by Erich Schmidt, both archaeologists with



the University of Chicago's Oriental Institute (now the Institute for the Study of Ancient Cultures). In 1933, a team led by Herzfeld uncovered a trove of clay tablets and fragments in two rooms that were part of the city's fortification walls. Called the Persepolis Fortification Archive, this collection held some 15,000 tablets, mainly written in Elamite using cuneiform or Aramaic using an alphabetic script. Other languages, including Old Persian, Greek, and Akkadian, were used as well. The sheer number of texts in so many languages is unique in the ancient world. "The Achaemenids weren't the only ancient dynasty that used bilingual, even trilingual inscriptions," says Soheil Delshad, an epigrapher at the Free University of Berlin, "but they were the only dynasty that mass-produced royal inscriptions in different languages."

The texts are primarily administrative and were mostly inscribed between 509 and 493 B.C., during Darius I's reign. Their main purpose was to record the allocation of laborers, food, and drink, including rations for workers, fodder for livestock, and offerings for the gods. However, details such as laborers' ethnicities, specializations, and work conditions were also occasionally included. "That's the hidden part of the tablets," says Delshad. Providing even more primary sources, between 1936 and 1938, Schmidt's team discovered what came to be called the Persepolis Treasury Archive. Smaller in number and scope, these 746 tablets and fragments concern payments of silver to skilled craftspeople to replace or supplement their food rations between the spring of 492 B.C. and January of 457 B.C.

The tablets also enumerate the scale of labor expended on the capital. "We can now talk with real figures," says Henkelman. "I can tell you that there were 10,000 stoneworkers on the site and calculate what that means in terms of daily rations and how they were organized in groups." According to texts Henkelman has analyzed, many thousands of specialized workers from at least 30 different ethnic groups converged on Persepolis. The tablets reveal that their daily food rations included barley ground into bread or porridge, date or grape wine, and beer from cereals, perhaps emmer or barley. Cooks also used wine vinegar and salt to preserve food. Based on their job titles and wage scales, the majority of workers were likely fulfilling the labor obligations of their satrapies and most were not enslaved. "That doesn't mean that I think that their lives were rosy," Henkelman says, "or that they liked what they were doing, or that they had opted for it themselves."

The workers' absence must have been felt in their homelands. At least 10,000 young Babylonians, the tablets record, were forced to relocate to Persepolis, a journey that may have taken months. Considering the dates listed in the texts, it seems many workers only came to the capital during certain parts of the year. These costly, large-scale, seasonal migrations indicate

Reliefs on stairs of the Apadana portray diverse peoples from across the empire bringing gifts typical of their homelands to the Achaemenid king. Top to bottom: the Median delegation brings a short sword, bowls, and a pitcher; Assyrians present a pair of rams; Bactrians bring a two-humped camel and bowls; Ionians bring cloth and wool; and Lydians carry armlets with griffins at the ends, bowls, and pitchers.

how crucial the Achaemenid rulers felt it was to build a capital reflective of styles from across their empire. The kings, too, moved throughout the year among their palaces in various cities—summering in the slightly cooler Persepolis and spending winters in balmy locales such as Susa and Babylon. Matthews speculates that the royals may have timed these movements to avoid periods of major construction at Persepolis. When thousands of workers arrived and scaffolding masked buildings, the king and his court likely skipped town for the season.

PERSEPOLIS EXTENDED FAR BEYOND its monumental terrace. Beginning in 2008, the Iranian-Italian Joint Archaeological Mission in Fars, led by scholars from Shiraz University and the University of Bologna, began investigating the broader urban settlement that supported royal activities. In an area known as Persepolis West, about a quarter of a mile from the terrace, the researchers uncovered what appear to be workshops where bricks, ceramics, and other luxury building materials were produced. Archaeologists have excavated the remains of kilns, glazed bricks, metal scraps, and locally sourced pigments that they have shown were used to paint the terrace facades. These include paints that some scholars once believed had been imported, such as Egyptian blue, a coveted pigment invented in Egypt around 3000 B.C. Rather than importing this product, however, the Achaemenids made it on-site, possibly with Egyptian experts leading the operation. Chemical analysis of Persepolis West kilns and waste pits established that artisans used animal bone ash to make a glistening white finish that adorned surfaces on the royal terrace. Researchers think this technique might have been less expensive and time-consuming than the standard ancient method of extracting lime from limestone.

Farther out from Persepolis West, about two miles from the terrace, the team investigated a site called Tol-e Ajori. There, between 2011 and 2014, they uncovered the collapsed



A relief on a door from the palace of Xerxes shows the king with his attendants, who carry a parasol and a fly whisk.

remnants of a brick building. After examining column bases and building foundations at the site, the archaeologists believe grand monuments once stood beyond the building. Amid the rubble, the team recovered thousands of glazed baked bricks, some decorated with reliefs that were once brightly colored. Researchers examined some 300 brick fragments with microscopes and instruments that detect materials' chemical composition to learn about the glazes and their original hues. The bricks were baked in standardized sizes and shapes. Based on their identification of fitters' marks in white paint that instructed bricklayers where to place each block, archaeologists have determined where individual pieces fitted in the walls.

Drawing on their understanding of the bricks' placements and original colors, archaeologists concluded that the bricks were part of a 130-foot-long gate with interior hallways and benches. It was adorned with bulls and mythical dragon-snakes called *mušhuššu*. These creatures were associated with the Mesopotamian gods Adad and Marduk, respectively, and were depicted on structures in Babylon. Two of the Tol-e Ajori bricks also bear painted Babylonian cuneiform signs, which researchers think may represent the word *sharru* for "king," and include the sign *ká* for "gate." It appears the Tol-e Ajori gate was a slightly larger, brick-by-brick copy of Babylon's Ishtar Gate, providing



This relief from the Apadana stairway depicts nobles in Median and Persian attire conversing, holding hands, and touching each other's shoulders.



Left to right: The building in the city walls where the Persepolis Fortification Archive was discovered; an Elamite tablet found in the archive; an Elamite tablet found more recently in Persepolis; and conservator Ensiyeh Shiri working to preserve an Elamite tablet

another example of how the Achaemenid kings drew on styles from territories they had conquered. Says Matthews, “Tol-e Ajori, with the almost replica of the Ishtar Gate, shows remarkable connections between Achaemenid architecture and Babylonian practices.”

THE ACHAEMENIDS’ cultural blending extended to the natural world. New paleoenvironmental research on plant remains deposited in lakes near the capital has helped reveal how the founding and growth of Persepolis changed the landscape. In 2009 and 2012, researchers collected nearly 12 feet of layered sediments from the bottom of Maharloo Lake, about 40 miles south of Persepolis. The sediments preserve plant remnants that have blown into the lake over the past 3,800 years, including periods before, during, and after the time of the Achaemenid Empire.

Paleoecologist Sara Saeidi Ghavi Andam, then of the University of Regensburg, identified pollen grains from 121 types of plants in the sediments. By analyzing which plants appeared during which periods, she detected dramatic changes coinciding with the imperial era. Before Persepolis was founded, the pollen record shows that cereal farms and pastures dotted a landscape mostly covered by natural grasslands and forests of oak and almond trees. Then, between 3,300 and 1,600 years ago—a period that includes the Achaemenid Empire—the region was filled with farms, vineyards, and orchards, growing crops such as walnuts, olives, and grapes. Some of the plants from this time were imported from faraway lands. According to Saeidi Ghavi Andam, pomegranates, which are native to Iran’s north, were very likely brought to southern Iran as saplings.

Even more distant origins can be ascribed to the olive tree, another non-native species that appeared in abundance around the beginning of the Achaemenid period. Researchers believe that the Persians encountered the tree during their conquests in the Levant or even farther afield in the Eastern Mediterranean. The victorious imperialists may have brought seedlings or saplings home along with Levantine prisoners and conscripted laborers. Support for this scenario can be found in what’s thought to be the Achaemenid Elamite word for olive, *zadaum*, which appears in the Persepolis Fortification Archive. *Zadaum* is known to have been borrowed from Western Semitic languages spoken in the Levant at the time. In addition, the robust pollen evidence for olive groves in Achaemenid territory contradicts ancient Greek and Roman



Pomegranate trees, a species imported to the region by the Achaemenids, still grow in the fields outside Persepolis.



Traces of blue paint (top) remain on door molding of the king Artaxerxes II's tomb and (above) on a building called the Hall of 100 Columns.

accounts claiming that Persia and its neighboring regions grew every kind of fruit—except olives.

Scholars have now identified the names of more than 40 tree types mentioned in some 400 texts in the Persepolis archives. While most of these texts mention harvested fruits, nuts, or aromatic resins, two tablets discuss how the trees themselves were cared for. The texts account for well over 10,000 trees in all and some list the locations of and individuals responsible for particular stands of quince, mulberry, apple, pear, and olive trees, as well as numerous species that have yet to be translated. For example, the texts state that more than 3,500 *karukur* trees—an undeciphered name—were grown at 11 locations. Other texts say 7,500 portions of this tree's fruit were laid upon the royal table, but just 240 servings were distributed to hundreds of workers. Some of the people named in the texts—Maraza, Napartanna, Zimakka—held a title that may mean deputy fruit manager. They oversaw deliveries and supervised workers based in different administrative districts near Persepolis. It's clear that the Achaemenids deliberately collected trees from across the empire to grow at home. "The kings decided this valley was going to be dedicated to fruit production," says Henkelman. "It's regional planning."

FOSTERING MULTICULTURALISM in Persepolis might have been a strategy the Achaemenids employed to promote peace—but it also strained their economy. According to Cornell University archaeologist Lori Khatchadourian, maintaining the capital's blend of architectural styles constrained and consumed the Achaemenid rulers. While Darius I's original plan for the terrace likely entailed a handful of buildings along with gardens and open courts, later kings commissioned increasingly grand structures. "It's clear that subsequent Persian kings in the Achaemenid Dynasty decided to add their own marks to the terrace site through massive building programs," says Matthews. In the end, at least 473 columns of stone and wood supported terrace buildings, at least two of which had 100 columns each. Not only did the kings need the raw materials and skilled workers to build these structures, they also had to repair and renovate them after decades of use.

This depleted their resources and may have distracted the kings from more urgent matters, including revolts in Egypt and Babylonia, as well as the growing threat from Greece. Perhaps this helps explain why the empire was vulnerable to invasion and defeat by Alexander the Great in 330 B.C. Adding insult to injury, after spending four months on the royal terrace, the conqueror burned Persepolis down. According to the ancient Greek historian Plutarch, after torching the city, Alexander's soldiers spirited away its treasures on 20,000 mules and 5,000 camels. Two centuries after its founding, the great multicultural city was reduced to ruin.

Despite Persepolis' abrupt end, the Achaemenids' vision for their city left an enduring legacy. The kings constructed a capital that incorporated peoples, styles, and materials from varied and distant lands. In doing so, they communicated a



This huge bull-headed sculpture once topped a column on the royal terrace at Persepolis.

then-radical view that empires of diverse cultures function best when people are allowed to maintain their traditions and ways of life. This seems to have been correct, as the Achaemenids' massive empire survived for two centuries through the reigns of 10 kings. Perhaps it is best, as Matthews says, to be the conquerors who let people be. ■

Bridget Alex is a science writer in Somerville, Massachusetts.

An Elegant Enigma

The luxurious possessions of a seventeenth-century woman continue to intrigue researchers a decade after they were retrieved from a shipwreck

By JARRETT A. LOBELL

THE ELEGANTLY DRESSED woman ran her eye around the large, empty living room that had once been filled with richly hued silk-and-wool carpets made in Lahore, finely carved furniture, and calf leather-bound books. She thought of the large dining table set for so many parties with shiny silver goblets and blue-and-white Chinese porcelain, and she wondered what her life would be like in the future. She had spent decades in this far-off land, but it was time to leave. Her belongings had been packed in four heavy chests weeks before, sent ahead to arrive and be put away before she and her family even embarked on the ship that would bring them home. She thought about how happy and relieved she would be when she saw some of her precious personal items again. There was the red velvet purse with silver embroidery she carried to special events, the finest pair of silk stockings she owned, her ivory comb and pig-bristle brush, the little standing mirror she used to take a last look at herself each morning and evening, and two priceless dresses, one of which she treasured most of all.

Who was this woman? No one knows.



An extraordinarily rare and luxurious seventeenth-century silk dress (far left) is one of the 1,500 artifacts pulled from the wreck of a Dutch merchant ship found off the island of Texel in the Wadden Sea. This early seventeenth-century painting depicts Anne of Denmark (1574–1619), James VI of Scotland's queen, wearing a similar dress.



NEARLY 15 YEARS AGO, off the small Dutch island of Texel in the Wadden Sea, recreational divers spotted a shipwreck 30 feet below the surface. Some five years later, the sands that covered the wreck had shifted and more of the ship began to appear. Divers quickly removed some of the ship's contents. (See "Global Cargo," May/June 2018.) The shipwreck came to be called the Palmwood Wreck for its cargo of unworked wood. As archaeologists, historians, and conservators continued to study the ship, which remains on the seafloor, and the more than 1,500 objects—including carpet fragments, wooden furniture, books, everyday and fancy dishware, and silver vessels—that were recovered, it became clear that the ship had been transporting more than just a valuable raw material used to make chess pieces and musical instruments.

Despite early suggestions that the vessel may have been an English warship or royal ship on a secret mission to sell the crown jewels to fund the English Civil War, the wreck has now been conclusively shown to be a Dutch-built trader constructed around 1645 that sank around 1660. "This was a well-known type of Mediterranean trading ship called a pinnace," says Alec Ewing, curator at the Museum Kaap Skil, where some of the most important artifacts from the wreck are housed. "Every archaeological marker, and its location in a spot where ninety-nine percent of the wrecks are Dutch ships, points to a Dutch origin. It's time to let the English theory go." In the seventeenth century, the Golden Age of global shipping, Dutch merchants brought a vast array of goods from across the world to the Netherlands. "This trading ship was almost certainly on its way back to northern Europe, and most likely to Amsterdam," Ewing says. "But that doesn't really explain what four chests of extremely luxurious objects that were already decades old when the ship sank were doing on board."

Among the contents of one trunk was a collection of textiles and garments, some of the rarest artifacts dating to the seventeenth century ever recovered. "When I was first

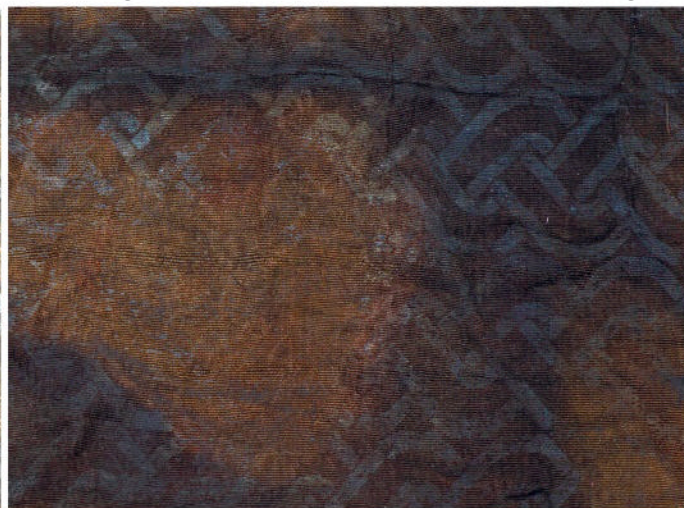


invited to look at a seventeenth-century dress from a shipwreck, I didn't really believe it," says Emmy de Groot, a textile conservator and lecturer in textile conservation at the University of Amsterdam. "There was a huge number of textiles, and not just one, but, we eventually learned, two dresses." The first was a red dress of patterned satin embellished with silver thread along its edges and seams. It had, surprisingly, retained its shape after nearly four centuries under the sea. The second, even more lavish garment, took shape over several years. "At first

we didn't immediately recognize it as a dress," says de Groot. "When we started sorting through the over one hundred pieces of textile, some of which were quite small, we slowly started to realize that there were fragments that appeared similar, that these pieces would make another dress. It didn't look very nice because the sewing had come apart and the fabric appeared gray, brown, and stained."

When it was pieced together, the dress was even more exceptional than the researchers had imagined. Upon examining the pale silk under a microscope, de Groot's students learned that tiny strips of silver had been woven into the fabric to create the silk's interlocking braided heart pattern. "When you use your imagination," says de Groot, "you can see how truly spectacular the dress must have been." The garment could only have belonged to an extremely wealthy woman at the highest echelons of society and been intended for only the most special occasion. "Such an extravagant gown would have been worn on the most important days of your social calendar, like a coronation or a day at court," Ewing says. But the dress may have been made for an even more unique, and more personal, event. "The textile researchers think it was likely a wedding dress," he says. "And if you save just one dress, it is your wedding dress."

For 350 years, the dress had been on the bottom of the sea in a dark and oxygen-free environment covered with the tremendous pressure of many feet of water and sand. "As soon it was brought to the surface, we were worried it would begin to



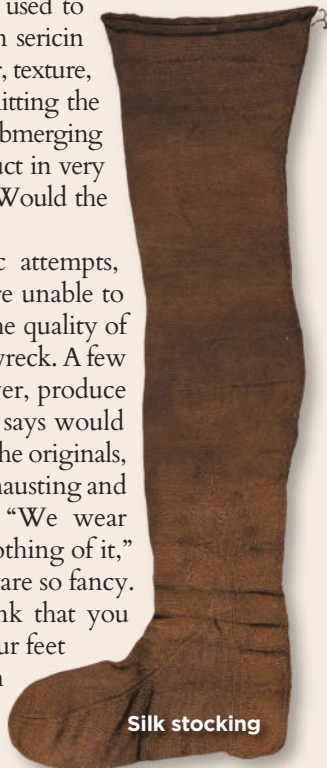
Tiny strips of silver (left) were woven into silk to create interlocking hearts (right) in the fabric used to make the dress. The materials would have been extremely expensive, and the amount of labor involved in making both the fabric and the garment enormous.

change radically,” de Groot says. “I’m convinced that we started to lose silver while bringing it up through the sea. And some of the smaller fragments that were salvaged did in fact turn to dust. We were very worried and thought it—and the rest of the textiles—might degrade very rapidly and be gone in a year.”

KNIT ONE, PURL TWO

In addition to the silver and red dresses, inside one trunk recovered from the Palmwood Wreck was an extraordinary pair of patterned silk stockings. These garments afforded researchers an unprecedented look at the skill of seventeenth-century knitters and a chance for an unusual experimental archaeology project that curator Alec Ewing of the Museum Kaap Skil says was much more fruitful than he expected. One of the scholars working on the artifacts from the wreck asked volunteers from across the Netherlands to try to re-create the stockings. “The stockings look brand new,” says Emmy de Groot, textile conservator and lecturer in textile conservation at the University of Amsterdam. “By re-creating them, you can discover how they were made—and the kinds of difficulties encountered in doing so.” For example, the researchers learned that it was simple enough to knit a similar pair of stockings using wool that would have been suitable for everyday wear. However, once the volunteers started to use the type of very fine silk yarn that would have been imported from the Far East in the seventeenth-century, it became clear that it would have taken hundreds of hours to make the single pair. The researchers also had to figure out whether it was necessary to degum the silk—a process used to remove the gelatinous protein sericin to improve the material’s color, texture, and sheen—before or after knitting the stockings. This step requires submerging the yarn or the finished product in very hot water, thus shrinking it. Would the stockings still fit?

Despite their enthusiastic attempts, almost all the volunteers were unable to make a stocking matching the quality of those retrieved from the shipwreck. A few of the volunteers did, however, produce whole stockings that Ewing says would not look out of place next to the originals, although they found it an exhausting and highly complex operation. “We wear socks every day and think nothing of it,” he says. “But these stockings are so fancy. It defies imagination to think that you could have something on your feet worth thousands of dollars in labor hours—who does that anymore?”—J.A.L.



Silk stocking

The silver wedding dress, along with the red dress, stockings (see “Knit One, Purl Two”), and other textiles from the trunk, including a red caftan that researchers have identified as originating in the Ottoman Empire, are now displayed in pressurized-nitrogen cases. Thanks to these new cases, which provide an oxygen-free environment, scholars believe the degradation will be slowed as much as is possible. “We get sensor readings from the cases in our email every day,” Ewing says, “and I can confirm that they are operating very well.”

ALTHOUGH SOME QUESTIONS about the Palmwood Wreck now have answers, the mystery of who owned the trunks and their contents persists. Researchers have not been able to identify the ship by name or find documentation of a family or noblewoman whose luggage was lost. “There are records of things like this because these ships and their contents were insured,” Ewing says. “These records often survive because people make claims, but we haven’t found any records for this cargo or for a family on such a journey in the archives.” Nevertheless, according to Ewing, the wedding dress holds at least a possible clue to the woman’s identity. “When we really tried to understand what the dress would have been like, it was mesmerizing and so extravagantly expensive that it changed our understanding of this whole collection,” he says. “Who owns a dress like this?”

The dresses and other textiles have made that query even more complex because they were already 30 or 40 years old when the ship sank. “It says something that these people kept chests full of garments of all different sizes and from different cultures—some Ottoman, some from Amsterdam or London,” Ewing says. Scholars believe that they likely belonged to the wife of a Dutch consul, diplomat, or representative of a merchant family in, for example, southern Turkey, who spent years living there before returning to Amsterdam. Yet even without a face or name for the woman who got married in the silver dress, Ewing says it’s possible to understand something about her. His other favorite object from the wreck is the table mirror that must have once sat on the woman’s vanity. “I love that artifact because I can picture sitting in front of that mirror and seeing the image of that 400-year-old missing lady like I am peeking over her shoulder,” he says. “Although the glass is corroded and doesn’t reflect clearly anymore, she’s so close.” ■



A wooden mirror retrieved from the ship likely belonged to the owner of the silver dress.

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To see more images of finds from the Palmwood Wreck, go to archaeology.org/palmwood.

MORE THAN TWO MILLENNIA ago, a richly outfitted Celtic woman was buried beneath a massive stone tumulus along the River Seine at a site known as Vix, in the Burgundy region of central France. Laid on a wagon whose wheels had been removed and propped up against the tomb's eastern wall, the woman's body was adorned with luxurious bronze jewelry and

ornaments made of jet, amber, and coral. An intricately crafted gold torc with globe-shaped terminals at both ends, each decorated with a lion's foot and the winged horse Pegasus, was placed around her neck. Also in her grave were objects imported from across the Mediterranean and Baltic regions, including a five-foot-tall Greek bronze krater used for mixing wine and water. The vessel's surface was decorated with warriors in horse-drawn chariots, its handles with Gorgons' heads, and the top of its lid



The remnants of a massive stone tomb belonging to a woman that was built in the fifth century B.C. by Celts who lived in a hilltop settlement on Mont Lassois are located along the River Seine in the French region of Burgundy. The mound was discovered in 1952 and, in 2019, archaeologists conducted new excavations at the site, which is known as Vix.

with a figure of a woman. The krater is the largest metal vessel known from the ancient Mediterranean.

This high-status woman's grave was first discovered in December 1952, and was partially excavated in January and February 1953 by amateur archaeologists. During this especially wet winter, snow and rain left the ground covered in frost and the burial itself was deluged with water. The men worked hurriedly, digging a trench that led straight to the

mound's central chamber, where the woman, who came to be known as the Lady or Princess of Vix, was buried. Aside from some photographs of the artifacts, including the krater and torc, and a plan of the burial chamber recording the placement of the objects and most of the woman's skeleton, the excavators did not document their work in detail. They reported their finds to French cultural authorities but did not explore the rest of the burial monument, which had been mostly dismantled and

An aerial photograph showing a large, rectangular archaeological excavation site in a rural landscape. The site is a deep, reddish-brown trench, partially enclosed by a metal fence. In the background, there is a small village with red-roofed houses, surrounded by green fields and a forested hill under a blue sky with scattered clouds.

Inside a Magnificent Celtic Tomb

New investigations of an Iron Age burial in France reveal the source of one woman's exceptional power

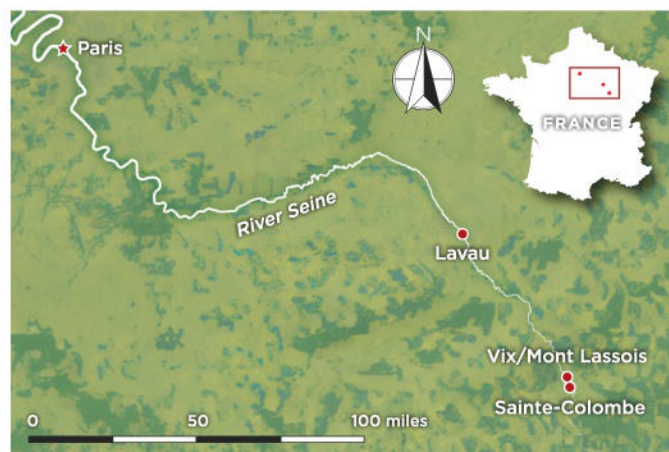
By BENJAMIN LEONARD

mined for its stone by the first century A.D.

In fall 2019, a joint team from France's National Institute of Preventive Archaeological Research (INRAP) and the ARTEHIS laboratory of the French National Center for Scientific Research (CNRS) conducted new excavations at the site, which is located below a heavily fortified ancient hilltop settlement on Mont Lassois. Although the funerary monument's superstructure is poorly preserved, this time archaeologists were able to examine how it was constructed and to excavate the side of the monument that faced the settlement. They were searching for evidence of funeral rituals that would have accompanied the woman's interment.

In the backfill of the 1953 excavation, the researchers identified more bones belonging to the woman, who died between the ages of 30 and 40, as well as hundreds of fragments of metal objects that had been buried with her. By comparing these artifacts with the contents of other high-status graves uncovered in the area, researchers are seeking to better understand the powerful Celtic society that dominated this region for a relatively brief time in the sixth and fifth centuries B.C. The woman's grave is among the most opulent Iron Age (800–50 B.C.) burials in all of western Europe. She was clearly an individual of considerable importance in both the earthly and supernatural realms at Mont Lassois, which seems to have been a political center that, for a time, controlled territory estimated to have covered some 30 miles. "The Vix tomb's size and richness are a testament to the very high rank of the deceased," says INRAP archaeologist Bastien Dubuis. "Her memory was imposed on the landscape for eternity."

HISTORIANS SUCH AS the second-century B.C. Greek writer Polybius and the Roman author Livy of the first centuries B.C. and A.D. documented encounters between their



cultures and an enigmatic people they called Celts that had taken place centuries earlier. "Celts," however, does not refer to a single, homogenous people. Instead, it refers to diverse groups living throughout central and western Europe in the first millennium B.C. who shared a similar material culture and, scholars believe, a common language family. Although the exact origins of the peoples traditionally known as Celts are opaque, archaeologists generally agree that they emerged from two cultures. The Hallstatt culture, which flourished between about 800 and 450 B.C., derives its name from a town in the Austrian Alps where an Iron Age cemetery was discovered in the mid-nineteenth century. In more than 2,000 graves dating to the seventh and sixth centuries B.C. at the site, archaeologists unearthed impressive assemblages of grave goods, including weapons, armor, bronze vessels, and jewelry from across western and eastern Europe and the Baltic. A later culture known as La Tène is named after a site in western Switzerland where thousands of artifacts were recovered from a

lake bed in the late nineteenth and early twentieth centuries. Dating from about 450 to 50 B.C., these high-quality objects include an array of shields, spearheads, and swords, as well as finely crafted brooches and other accessories, bronze cauldrons, cart wheels, and tools for working leather, metal, and wood. It's possible people deposited these objects at the site as part of votive rituals.

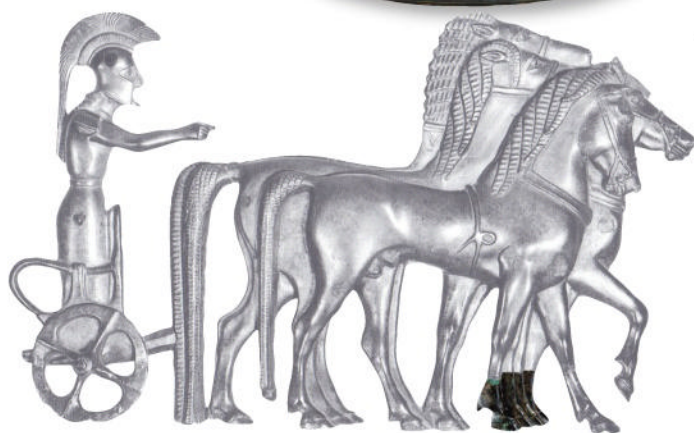
These Iron Age Celtic cultures did not use writing, and archaeological evidence of their settlements is often poorly preserved. Graves are the primary source of evidence for how they organized their societies and expressed their beliefs. Although mortuary practices were fairly consistent across western and central



A podium made of limestone blocks was uncovered next to the entrance of the tomb, which faced the ancient settlement on the summit of Mont Lassois.



A five-foot-tall Greek bronze krater (left), or wine-mixing vessel, was found in a corner of the woman's burial chamber. A Gorgon's head (top right) decorates each of its handles. Fragments of the fingers (above) of the figure of a woman (right) attached to the krater's lid, as well as the lower legs of horses (below) from a frieze depicting warriors in chariots (below left) were uncovered in the 2019 excavation.



Europe, there were regional variations in the kinds of funerary goods that accompanied those buried in the richest graves to the afterlife. These differences seem to have depended on a community's proximity to the Alpine passes to northern Italy, as well as to routes presumed to have gone through the Greek colony of Massalia (modern Marseille) to Italy and the Greek world. "What's striking is that in spite of those regional differences, there's still a pretty strong sense that these people would have recognized each other as linked in some way," says archaeologist Bettina Arnold of the University of Wisconsin-Milwaukee.

"Religious activity associated with funerary practices seems to be one of the common denominators."

The Vix tomb is one of two burials of elite women that have been discovered in the Seine Valley within four miles of each other. Although a woman buried at nearby Sainte-Colombe died about a century earlier, the construction of her funerary mound and the items in her burial chamber are similar to

those of the Vix tomb. For example, both women were buried atop wagons upon which they were likely conveyed during their funeral processions. Other artifacts connect these burials to broader trends in late Hallstatt and early La Tène graves throughout Europe, such as elaborate sets of drinking vessels from the Mediterranean. There is also evidence that the walls of many burial chambers were covered with fabric, Arnold says, creating something akin to a house for the dead.

DUBUIS' NEW INVESTIGATIONS of the Vix mound have also yielded information about its construction that wasn't uncovered in the 1950s. Before many of its stones were robbed for reuse, the tumulus was a funerary monument that was slightly oval in shape and more than 130 feet wide at its broadest



An iron skin scraper (top) decorated with gold and silver-gold alloy, as well as bronze fasteners (above) embellished with imported materials such as coral, are among the objects archaeologists discovered in the backfill of the 1953 excavation.

point. It was built around 470 B.C. of courses of stone blocks with layers of clay and stone in between. The nearly 100-square-foot burial chamber lay 10 feet belowground.

Dubuis and his team focused their excavation on the northwest section of the mound, facing the settlement, which they thought was likely the front of the tomb. They uncovered a stone facade and a ramp leading up to the entrance. On one side of this entryway, they identified a rectangular stone podium that may have served as an altar or a base for a statue of the deceased or her ancestors. The woman's funeral ceremony was almost certainly held on the other side of the entryway. Construction of the funerary monument would have required considerable forethought and the efforts of a skilled overseer. "We see clear evidence of a very organized society capable of mobilizing a large workforce for a complex project over time," Dubuis says. "This required planning different stages, dividing tasks, and managing resources." For example, the stones were probably quarried several miles away and brought to the site by boat on the Seine.

Exotic objects that were excavated from the woman's grave in 1953 reflect her involvement in a network of long-distance economic exchange and political contact between the Celts and the city-states of Greece and Italy. There are bronze basins from the central Italian region of Etruria, Greek drinking cups, and a rare silver libation bowl. Until the last decade, very few silver artifacts had been found in fifth-century B.C. Celtic graves. Among the hundreds of metal objects and fragments archaeologists recovered from the backfill of the original excavation are decorative bronze nails and hooks from the wagon. They also discovered the last two missing pieces of the krater,

which depict the lower legs of horses drawing a chariot on its frieze and the fingers of the woman on its lid. They also recovered a small iron *scalptorium*, or skin scraper, decorated with threads of gold and silver-gold alloy.

In addition to the torc, the woman's body was bedecked with bronze anklets, jet bracelets, and beads carved from stone and amber that likely came from the Baltic. During both excavations, archaeologists found bronze and iron clothes fasteners called fibulas that were manufactured locally and decorated with imported gold and other materials, including coral from the Mediterranean. While the drinking vessels placed along the sides of her tomb signified the woman's wealth and status, Arnold says, the personal ornaments on her body might indicate the kind of role she played in Vix society. Some of the objects buried with her, Dubuis explains, suggest that her position may have been related to practicing rituals and communicating with the spirit world. Arnold says that amber, in particular, was probably viewed as having a protective quality.

Holding a position of religious authority seems to have been one of multiple pathways to leadership in the society centered at Vix, where women were among the ruling elite. "Individuals who were in positions of power and authority didn't necessarily have to be able to lead armies into battle," Arnold says. "What they probably did need was a charismatic personality and the ability to convince others that they had a connection to the supernatural realm that would make their world more secure." The woman's grave goods are clear evidence of the economic networks she was connected to, but her personal ornaments may also be emblems of her role in life as a conduit to the otherworld. "There was an economic basis in which displaying and redistributing wealth was critical," says Arnold, "but I think that this society's power structure was primarily based upon spiritual authority."

TRACES OF THE HILLTOP settlement on Mont Lassois offer researchers a rare opportunity to investigate how Celtic people lived. Since 1991, archaeologist Bruno Chaume of CNRS' ARTEHIS laboratory has led excavations of the settlement and the necropolis surrounding the woman's tomb. South of the mound, he uncovered a rectangular building oriented toward the settlement that was filled with a large number of ceramic cups and food remains, suggesting that



Decorative bronze nails (above) and bronze hooks (facing page) once adorned the four-wheeled wagon on which the woman's body was laid inside her burial chamber.

people held feasts there. Just inside the entrance, archaeologists discovered a pit containing two carved limestone statues laid next to one another on their left sides. The figures are about two feet tall, and both of the statues' heads were intentionally removed in antiquity and have not been found. The statues depict a male warrior and a seated woman with her hands resting on her knees. Around the woman's neck is a torc with oval terminals at both ends, a piece of jewelry that bears a strong resemblance to the one found around the neck of the woman in the Vix tomb.

Both statues would likely have been displayed standing on bases somewhere in the building. Chaume suggests that these figures represent ancestors who would have been revered during the feasting ceremonies. In fact, he and other scholars believe the statue of the woman may be a depiction of the deceased woman herself. "This is one of the first times that we have found proof of a Celtic ancestor cult and the first time that we could document a structure built for this purpose," Chaume says. "At the moment, this sanctuary is still the only one of its type known in Europe." That ancestors were venerated after death—a practice that most scholars agree was a feature of Celtic society in Iron Age Europe—suggests that the political system at Vix might have involved, at least in some cases, an element of dynastic power. This arrangement of inherited succession was fragile, however—the sanctuary was destroyed and the figures beheaded in the mid-fifth century B.C., around the time the settlement was abandoned. "The deliberate breaking of the statues reflects a swift collapse of the princely world and a distrust of the elite," says Dubuis.

At the top of Mont Lassois, Chaume discovered dwellings inside 15 separate enclosures, each surrounded by a ditch and palisade. Three raised structures on the southern edge of the hilltop were, he says, granaries for storing food. Within an immense enclosure at the center of the settlement, Chaume has



A stone statue of a woman (left) unearthed south of the Vix mound includes a torc that resembles the gold torc (below) found encircling the neck of the woman buried in the tomb.

unearthed five large buildings. The biggest measures 115 by 70 feet, with a pitched roof at least 50 feet high. The building's function is unclear, but Chaume says its size and prominent location suggest that it likely served multiple purposes, as both a dwelling and a seat of religious authority and political power.

THE LADY OF VIX WAS not the only distinguished individual in the region whose wealth and social stature warranted a funerary monument of the highest opulence. In 2014, INRAP researchers unearthed a tomb containing the lavish burial of a man at the site of Lavau in Troyes, some 40 miles northwest of Vix. (See "Eternal Banquets of the Early Celts," November/December 2015.) Dating to around 450 B.C., the man was buried beneath a large mound with an array of Greek and Etruscan drinking ware and rich ornaments rivaling those of the woman at Vix. His body was laid upon a two-wheeled chariot typical of a slightly later period than the wagon belonging to the Lady of Vix. He wore gold bracelets and a jet armband, and around his neck was a gold torc embellished with winged monsters. An ornate bronze wine cauldron found in the tomb is decorated

with eight lionesses and the Greek river god Achelous.

The grandness of this burial marks the deceased as a high-status member of the aristocracy who had privileged access to the same kinds of exchange networks as the woman at Vix. As people began to desert the settlement at Mont Lassois, Dubuis suggests, the influence of Troyes seems to have been on the rise, likely because of the area's central position along trade routes to the Mediterranean, southern Britain, and Celtic regions north of the Alps. In short order, Lavau seems to have assumed Vix's former status as a local power center. "The plain of Troyes, which had been densely inhabited since the Bronze Age, benefited from access to local resources, including agriculture and textiles, as well as regional resources, such as iron ore," Dubuis says. "It was located at a crossroads between the Seine Valley and other important roads coming from the west, southwest, and east."

The ascendancy of Troyes appears to have been short-lived. By the end of the fifth century B.C., economic and cultural influence shifted once again, this time to the Yonne Valley to the west and the Marne Valley farther northeast. But, for nearly a century, the people of Vix—guided for a time by a powerful woman richly honored in both life and death—controlled a part of the landscape that connected them to a much wider world. ■

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The Ancestral Puebloan site of White House in Arizona's Canyon del Muerto was occupied from about 1150 to 1300, a period of increasing strife across the American Southwest during which many farming communities built villages in defensible locations.



DEFENDING THE CANYONLANDS

Rare shields from the American Southwest are a legacy of a turbulent time in Native history

By ERIC A. POWELL



A basketry shield (left) unearthed at the site of White House in northern Arizona in 1925, which was recently identified in the collections of the American Museum of Natural History, measures more than two feet across. An image (right) of the shield produced using a software program called DStretch shows traces of the artifact's original painted decoration.

AMONG THE ESTIMATED 500,000 archaeological and ethnographic objects in the collections of the American Museum of Natural History (AMNH), some 800 artifacts, including pots and stone tools, are from a site known as White House. This small village is tucked into a cliff alcove in northeastern Arizona's Canyon del Muerto and was inhabited by a farming community from approximately 1150 to 1300. In 2009, University of Arizona archaeologist Edward Jolie was in the museum's extensive Southwest collections looking through drawers holding objects excavated in the early twentieth century from White House when he came across something remarkable.

Jolie, who studies perishable artifacts, had come to the museum to examine textiles and basketry from New Mexico's Chaco Canyon, where a large cluster of settlements at the center of an important cultural network reached its zenith around 1100. While at the museum, he thought he would

take advantage of the opportunity to survey perishable objects from other Southwestern sites—which is how he found himself holding a two-foot-wide shield fashioned from sumac fiber basketry coils that had been discovered in 1925 and then sat unnoticed in the museum’s collections for almost a century. “Basketry shields are incredibly rare in the archaeological record,” says Jolie. “To that point, there were only three known from the entire Southwest.” Based on his experience studying the previously identified examples, Jolie was confident the artifact from White House was a basketry shield.

And, as he inspected the object closely, he discovered the tips of two wooden projectiles embedded in the shield’s coils. This was the first direct proof that basketry shields were not purely ceremonial but had in fact been used by warriors during conflict. “Some people doubted that such shields would be effective in combat,” says Jolie. “But these were the smoking projectile points, as it were.” Later, while reviewing notes he had taken on other objects at the museum, Jolie realized that he had come across multiple fragments of another previously unidentified basketry shield. This second shield had been excavated at an Ancestral Puebloan site in New Mexico known as Aztec West Ruin.



Shields are a prominent motif in rock art in the Southwest, but with surviving basketry shields so rare—and only three shields made from bison hide known from the area—few archaeologists have had the opportunity to study them firsthand. “The sample size is tiny,” says Jolie. “But these were important, powerful objects to ancient Native peoples, and they can tell us something about their lives during a very dynamic time.” These shields, and many rock art scenes depicting shields, date to a period in Southwestern history marked by prolonged drought when political systems failed, levels

of interpersonal violence increased dramatically, and farmers relocated their villages to defensible locations. They often decorated their newly fortified homes with images of shields.

SHIELDS FIRST APPEAR in Southwestern rock art created between A.D. 750 and 850. These early images were made by peoples archaeologists refer to as the Fremont, who lived in what is now Utah and were in frequent contact with Ancestral Puebloan communities to the south. The first Ancestral Puebloan rock art depictions of shields appear sometime after 1000. It’s possible that people began to make shields around this time because of the increasing popularity of bows as weapons. Prior to the introduction of bows in the late first millennium, the spear thrower, or atlatl, was the weapon of choice, and warriors used wood implements known as fending sticks to parry spears. Fending sticks, though, would have been largely ineffectual against swiftly moving arrows.

From about 1000 to 1150, a political and religious system centered on Chaco Canyon, where Ancestral Puebloans constructed large, multistory buildings known to archae-



Two fragments (left) of a basketry shield from Aztec West Ruin in New Mexico were also discovered in the American Museum of Natural History collections. An artist’s rendering (right) shows the likely placement of the fragments in the shield, which was decorated with a zigzag pattern and would have been a foot and a half in diameter.



An embedded wooden projectile point (center) is visible in the coils of the basketry shield from White House.

ologists as great houses, united much of the Southwest. But by 1200, this world had broken down. Drought, widespread erosion, and crop failure overwhelmed the region's farmers. People abandoned many settlements and migrated elsewhere, and farmers moved from villages near fields to defensible cliff dwellings. Archaeologists have discovered that some villages were put to fire and that the bones of many people buried during this period bear the marks of violent encounters.

Radiocarbon dating of a vividly painted red, white, and blue person bearing a shield, known as All American Man, at a site in Utah's Salt Creek Canyon, shows that the image was created in the late thirteenth century, during this period of increased strife. Around the same time, the Ancestral Puebloan people known to archaeologists as the Kayenta of eastern Arizona and southern Utah began to mark their villages with depictions of shields and shield bearers, perhaps in an effort to harness the shields' apotropaic, or protective, magic. In Arizona's Tsegi Canyon, for example, Kayenta communities created three-foot-wide images of shields in white, purple, and pink clay next to their most defensible cliff villages. While surveying rock art in Tsegi Canyon in the 1960s, archaeologist Polly Schaafsma first noted that the shields were always painted on the right side

of cliff dwellings as viewed from the canyon floor. Binghamton University archaeologist Maxwell Forton recently discovered still more pictographs painted on the right side of Tsegi Canyon villages. Though shields appear near cliff dwellings across the Southwest, this specific pattern is unknown in other parts of the Puebloan world. Forton believes the placement of shields on the right might have become important after 1200, when people from villages in Colorado's Mesa Verde region migrated to Tsegi Canyon and began to live side by side with Kayenta groups. "We think they formed an alliance with the Kayenta," he says. "The shield motif painted on the right side of villages could have been an inclusive symbol that reflected the unique social circumstances in Tsegi Canyon, where two peoples were coming together in a defensive social alliance against neighboring groups."

One shield image in Tsegi Canyon depicts an anthropomorphic figure. In the 1960s, representatives of the Hopi, whose ancestors include Kayenta peoples, identified it as representing the Hopi Fire Clan. Schaafsma has since consulted with other Hopi traditional knowledge keepers who identified a similar figure as the fierce hunting goddess Tiikywuuti. "She might have been painted on shields to scare the hell out of men," says Schaafsma, who notes that in the Rio Grande Valley in northern New Mexico, shields are especially abundant in rock art that dates from approximately 1300 to the onset of Spanish colonization in the early seventeenth century. Created in part by people who had left the region, these depictions are especially well executed. "The rock art figures that took the most time to make were shield figures, which got special attention and are superb," says Schaafsma. She points out that some of these shield depictions include both sun and Venus motifs, and that Puebloan traditional histories suggest that the Father of the War Gods crossed the sky every day with the sun as his shield, accompanied by Venus. "This was an animistic world,"



A pictograph of a shield on a wall at Arizona's Tsegi Canyon depicts an anthropomorphic figure that could be a symbol representing the Hopi Fire Clan. It may also depict Tiikywuuti, the Hopi goddess of the hunt.



This pictograph on a wall at Utah's Salt Creek Canyon portrays a figure bearing a shield. The figure, which is known as All American Man, has been radiocarbon dated to the late thirteenth century.

says Schaafsma. “Everything was alive on the landscape, and that includes the shield and shield bearer images, which were meant to warn other people to stay away.” Given how vital shields were to Puebloan people both symbolically and practically, Schaafsma remains puzzled that so few have survived in the archaeological record. “It’s amazing there aren’t more,” she says, “which makes it even more important that Jolie has found two additional basketry shields.”

JOLIE’S DISCOVERY OF WOODEN projectile points embedded in the newly identified White House shield is both a deft piece of detective work and a testament to the importance of studying seemingly unremarkable artifacts excavated decades ago. “It really shows the merit of going back into these old collections,” says Forton.

While examining the artifacts in the museum, Jolie used an imaging software program known as DStretch to reveal the faded pigments that once covered them. This offered a clearer look into how ancient Pueblos chose to decorate their shields. Jolie learned that the White House shield was



once painted with a diagonal band of brown and black squares, and that the newly discovered fragments from Aztec West Ruin were decorated with red and orange zig-zag motifs. One of the three previously identified shields, which is in the collections of the Smithsonian Institution, was recovered from Mummy Cave in Arizona's Canyon del Muerto and seems to depict a frog. It resembles the figure on the Tsegi Canyon shield pictograph that may show a Fire Clan symbol or the Hopi hunting goddess. Jolie's examination of the Mummy Cave shield using DStretch showed that the frog motif had been altered over time. "It's likely that the symbol was repainted or rejuvenated," he says, noting that it is probable that each shield bearer was responsible for painting or decorating their own shield, which would have given each object its own individual power. "There's some suggestion in the ethnographic record that the figure on the shield gave it special magical properties that were intended to confuse or distract an enemy," Jolie says.

Another previously identified shield was excavated from the grave of an unusually tall warrior at Aztec West Ruin and is in the AMNH collections. Jolie observed that this shield was once smeared with selenite, a crystal form of gypsum that would have reflected sunlight brilliantly in light gray to violet colors that might have disoriented adversaries. "You get a good sense of how it would have shimmered if someone standing in desert sunlight was spinning it," says Jolie. "This would have had a powerful effect on an enemy." It would also likely have given the person holding it a special charge, which, Jolie says, is not too far in the realm of speculation. "Actors playing Batman talk

about how they feel differently when they put on the Batsuit," he says. "There is probably something akin to that going on if you are holding a massive shield and it's got an eye-dazzling effect and everyone is wondering how that's happening."

While warriors probably decorated their shields with motifs of their own choosing, Jolie says the shields themselves were likely fabricated by their female relatives. "We know that in most traditional societies, the people who have the technical ability to make basketry are usually women," he says. "Skill in craft production is a way women may have increased their status." Women who created shields used successfully in battle would likely have enjoyed enhanced prestige in their communities.

THE REMNANTS OF additional basketry shields from the Southwest, which could reveal more about the Puebloan people who made and used them, might remain unidentified in museum collections. "There are lots of overlooked objects," says Forton. "The newly discovered shields are incredibly exciting, and they show how we should focus on the collections we have rather than creating new ones."

For Jolie, the shields illustrate the importance of broadening archaeologists' ideas of what count as important artifacts beyond durable objects such as stone tools and pots. "The vast majority of what people made in the past was perishable," he says. He also points out that in waterlogged sites in the Pacific Northwest, where conditions are favorable to preservation, up to 95 percent of what archaeologists find is made of plants. "Out of tens of thousands of artifacts, less than ten percent might be stone tools," says Jolie. "It's scary that we are basing so much of our reconstruction of the past on a small fraction of what people used on a daily basis. The shields are great examples of just how much we are missing." ■

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A basketry shield (facing page) measuring two and half feet in diameter was unearthed in Arizona's Mummy Cave. An image (below) of the shield produced using DStretch software shows that it was decorated with an image of a frog that was altered over time. An artist's rendering (right) shows how the shield may have once appeared.



AFRICA'S M



ERCHANT KINGS

Huge carved obelisks and stelas in northern Ethiopia were erected by the kings of the Aksum Empire, who ruled the Horn of Africa and Red Sea region for much of the first millennium A.D. The toppled Great Stela would have stood around 100 feet tall and is among the largest monoliths ever created.



The early Christian kingdom of Aksum was at the heart of a great maritime trading network

By JASON URBANUS

HUNDREDS OF ANCIENT obelisks and stelas are strewn across fields on the outskirts of Aksum, a city in the highlands of northern Ethiopia's Tigray region. The largest of these monuments, which lies toppled and broken into sections, was carved with doors and windows to mimic a 13-story building, and once stood around 100 feet high. Weighing more than 570 tons, the Great Stela, as it is known, was hewn from a single block of granite-like rock cut from a quarry two and half miles away. At more than three times the height of the biggest of Easter Island's moai statues and nearly 20 times heavier than the mightiest of Stonehenge's sarsens, it is among the largest monolithic sculptures ever created and transported.

These monuments, which date to the third and fourth century A.D., once marked the tombs of kings and high-ranking officials. The names of those who erected them, and the individuals buried beneath, have been lost or forgotten over the centuries. They were the rulers of the Kingdom of Aksum, which dominated the Horn of Africa and the Red Sea region for most of the first millennium A.D. Much like the Romans, their contemporaries and occasional allies, Aksum grew from a single city into an expansive empire whose kings controlled a territory comprising parts of modern-day Ethiopia, Eritrea, Sudan, and the southern Arabian Peninsula. The Aksumites' transcontinental trade routes stretched from Iberia to India, and perhaps even as far as China. They were a highly literate society, fierce warriors, and accomplished engineers and artists, and they issued their own gold coinage. The third-century A.D. Persian prophet Mani referred to Aksum as one of the world's four great empires, along with the Romans, Persians, and Chinese. "At



Gold coins depicting the fourth-century A.D. Aksumite king Ezana show him (top) with pagan symbols including a disk and crescent and (left) after his conversion to Christianity, when the pagan symbols were replaced by an image of the cross.



The Great Temple of Yeha, near Aksum, was built around 700 B.C. and is one of the most ancient and biggest standing structures in sub-Saharan Africa.

that time, Aksum is mentioned as one of the most powerful civilizations in the world, although people in the modern era may not know that or think of them in that way,” says Johns Hopkins University archaeologist Michael Harrower. “There has not been much archaeological attention given to Africa outside of Egypt.”

The stelae, obelisks, tombs, and ruins of major buildings, including administrative complexes and palaces, provide evidence of ancient Aksum’s thriving capital city during its heyday. Much of the modern town is built atop the ancient settlement, which has made investigation of its early history difficult. Over the past two decades, however, Harrower and other archaeologists have searched outside Aksum proper, working in both Ethiopia and Eritrea, to garner a greater understanding of the Aksumite civilization. Two recent projects, at the sites of Beta Samati in Ethiopia and the ancient port of Adulis in Eritrea, have revealed what life was like in the empire more than 1,700 years ago. These excavations have highlighted the Aksumites’ sophisticated building techniques, drawn attention to the important role that Christianity played in their culture, and, above all, underscored the existence of the trade networks that were the kingdom’s lifeblood and key to its rarely paralleled success.

THE ORIGINS OF THE Kingdom of Aksum are difficult to pinpoint and much debated. Although its most prosperous period fell between the fourth and sixth centuries A.D., what became the Aksumite civilization can be traced back to the Horn of Africa centuries earlier, to what archaeologists call the pre-Aksumite and

proto-Aksumite periods. “Archaeology indicates that the Aksumite state emerged out of the proto-Aksumite D’mt Kingdom, which flourished in the mid-first millennium B.C.,” says Washington University in St. Louis archaeologist Helina Woldekiros. During this period, people living in the Ethiopian highlands traded with Egypt and Nubia. These pre-Aksumites also shared close cultural links with the Sabaeans of the southern Arabian Peninsula. Archaeologists excavating around Aksum have shown that, in the mid-first millennium B.C., a burgeoning community inhabited the hilltop site of Bieta Giyorgis, just northwest of Aksum.

The cultural hub of the Ethiopian highlands in the first millennium B.C., however, seems to have

been about 30 miles northeast of Aksum, at Yeha, a site that contains some of the oldest and largest standing architecture in sub-Saharan Africa. The most prominent of these buildings is the Great Temple, which was dedicated to the Sabaean moon god, Almaqah, and was constructed around 700 B.C. Built of finely dressed rectangular blocks, some of which are 10 feet wide, it still stands more than 45 feet high. Although archaeologists have studied the temple for more than a century, very little work has been carried out in the countryside. Given the site’s impressive architecture and its likely role as a ceremonial gathering place for local communities, it was puzzling to Harrower that no trace of any large residential settlement had ever been identified. “There’s been a lot of research on Yeha, and on the temple itself, but not really in the surrounding area,” he says. “I was struck that there was an amazing temple there but no big urban site as you might expect.”

In 2009, Harrower and members of the Southern Red Sea Archaeological Histories (SRSAH) project began surveying the rugged terrain north of Yeha on foot. They started by interviewing the local people, especially farmers, who had intimate knowledge of the landscape, about whether they knew the whereabouts of any ancient sites. One place consistently came up in their conversations—Beta Samati. “After the third or fourth person mentioned it, I thought we should go there,” Harrower says.

The archaeologists were told that Beta Samati was located near the modern village of Edaga Tabu, around an hour and a half walk from Yeha. Even before the team reached the site, it quickly became apparent that they were heading in the right



direction. While they were still 20 minutes away, they began noticing pieces of pottery on the surface and abundant stone remnants of ancient structures. “We thought, ‘When we actually get to the place, it is going to be really important,’” says Harrower. And when they finally arrived, it proved to be one of the most momentous Aksumite sites ever discovered.

THE ANCIENT TOWN OF Beta Samati sits atop a hill that rises 80 feet above the surrounding valley. Its ruins, which are preserved to a depth of 10 feet in places, encompass an area of 50 acres, or the equivalent of around 40 football fields. The town was inhabited for more than 1,300 years, from the eighth century B.C. to the seventh century A.D. Spanning the pre-Aksumite and the Aksumite periods, Beta Samati thrived at the apogee of Aksum’s power, when it was an important production, trade, religious, and administrative center serving the capital city. During four excavation seasons between 2011 and 2016, a collaborative project of SRSAH and Aksum University, along with the Tigray Culture and Tourism Bureau and Ethiopia’s Authority for Research and Conservation of Cultural Heritage, explored its ruins. The team began their investigation at the hill’s highest point, as they assumed that was where the ancient town’s most significant buildings were likely to have been located. They found a network of stone walls and adjoining rooms that provided evidence of both residential and commercial activities. It appeared that the complex had not been built piecemeal, one property at a time, but in a deliberate way. “The walls were interesting because they were constructed simultaneously in a single effort,” says Harrower. “That tells us that there was some kind of communal effort and a plan.” Archaeologists found dishes, bowls, storage vessels, and grinding stones, as well as animal and plant remains, showing that some properties were used to produce, store, and consume food. They also unearthed evidence of metal and glass manufacturing, which was particularly noteworthy since it was previously thought that all glass found at Aksumite sites was imported from the Roman world.

As plentiful as the archaeological remains were atop the hill, farmers who had long cultivated the area suggested that the team turn to another location, closer to the hill’s base. “They said, ‘You should come dig at this other spot,’ because they had plowed up these huge stones that they used to build their own houses in the village,” says Harrower. The locals were correct. Archaeologists soon began to uncover the footprint of a large structure, measuring 60 feet long by 40 feet wide. “We knew it was some kind of monumental

building,” Harrower says, “but we didn’t know what it was.”

Small clues began to point to the building’s function, especially the discovery of a stone block and small stone pendant, both of which contained inscriptions in Ge’ez, an ancient Ethiopian language. The writing on the pendant seemed to read “venerable”



An excavator unearths ruins of a large stone architectural complex identified as a Christian basilica in Beta Samati. Some of the city’s archaeological remnants are preserved to a depth of 10 feet.

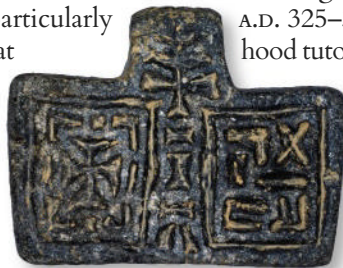
alongside what appeared to be an image of a cross. The stone block’s incomplete inscription was roughly translated as, “To this entrance, Christ be favorable to us.” This left little doubt that the team had uncovered an early Christian basilica.

Radiocarbon dating of wheat and barley seeds from the site indicated that the basilica was likely built in the fourth century A.D., making it one of the oldest—if not the oldest—known churches in sub-Saharan Africa. Its antiquity was not entirely unexpected, as Ethiopian tradition holds that the Aksumites were among the first in the world to adopt Christianity.

According to legend, the Aksumite king Ezana (reigned ca. A.D. 325–360) was converted to Christianity by his childhood tutor, Saint Frumentius, a Christian born in Lebanon who became the head of the Ethiopian church and its first bishop. Coins issued by Ezana during his lifetime seem to support this claim. Early in the king’s reign, his coins often included, alongside his effigy, a small crescent and a disk, symbols associated with pagan southern Ara-

bian gods. Later in his life, though, the king replaced that iconography with a single cross. “Aksum converted to Christianity in the fourth century, really much earlier than almost any other major kingdom,” Harrower says.

One of the primary reasons Christianity arrived in Aksum at such an early date is the regular contact the empire had with other



A stone pendant (top) and a stone block (above) found in Beta Samati are both inscribed in the Ge’ez language. They provide evidence to support the identification of the large building there as an early Christian basilica.

civilizations through global trade networks. Not only did the empire's location allow it access to Africa's interior, but its position along the Red Sea fostered relationships with people and cultures in the Arabian Peninsula and beyond. "The Aksumite state's extensive long-distance trade routes traversed the vast expanse from Nubia, located in present-day northern Sudan, to the Gulf of Aden in the Red Sea," says Woldekiros. "These trade routes served as conduits for the transportation of commodities from Egypt, Rome, the Byzantine Empire, India, south Arabia, and Nubia." Harrower's team has uncovered evidence of imported goods throughout Beta Samati, including amphoras from Jordan that likely once contained oil or wine, glass beads from the eastern Mediterranean, and Roman pottery produced in North Africa.

This level of cultural exchange created a diverse, multilingual society. Much like Egypt's Rosetta Stone, the fourth-century A.D. Ezana Stone records the king's accomplishments in three languages—in this case, Greek, Ge'ez, and Sabaean. With the influx of foreign languages and objects came new ideas and ideologies, including Christianity. "At that time, religion was spread through commercial trade routes," says Gabriele Castiglia, an archaeologist with the Pontifical Institute of Christian Archaeology. There was only one city through which everything that entered Aksum passed—Adulis. The port was the linchpin of this vital trade network. "The significance of the renowned international trading port of Adulis as the second most important city of the Aksumite civilization cannot be overstated," Woldekiros says. It is also a site on which archaeologists have recently focused their attention.



The ruins of the Christian basilica in Beta Samati date to the fourth century A.D., making it possibly the oldest church in sub-Saharan Africa.

AS FAR BACK AS 2500 B.C., Egyptian pharaohs launched trade expeditions to lands along the Red Sea, where they acquired exotic goods such as elephant ivory, leopard skins, and frankincense. They were among the first outsiders to pull their ships into foreign Red Sea harbors. At least as early as the first century A.D., the port that received most, if not all, Red Sea maritime traffic was Adulis. The city is mentioned as an important trade center in the *Periplus of the Erythraean Sea*, a first-century A.D. travel guide to the Red Sea and Indian Ocean, as well as in the Roman author Pliny the Elder's *Natural History*, which was written around the same time. Adulis continued to grow, and at the height of Aksumite power, was a vibrant settlement and the node through which wealth was funneled into the empire. "We have clear evidence that Aksum could not have achieved its great power over the southern Red Sea area without the city and the port of Adulis," says Woldekiros.

Adulis covered around 100 acres on the Gulf of Zula, yet only around 5 percent of it has been explored by archaeologists. Over the past six years, a joint project between Eritrean authorities and Italian institutions has revealed the city's opulence, how Christianity proliferated there, and how broad Aksumite trade networks were.

Although King Ezana and the royal court adopted Christianity in the fourth century A.D., it took time to spread from the capital to other towns and cities. By the sixth century A.D., the faith was deeply ingrained in places such as Adulis. "Adulis was founded as an emporium—a type of ancient trading post—but later became a great city, in my opinion thanks to the spread of Christianity," says Castiglia, who is director of the Italian excavations there. "It was full of churches, bishops, and monks." Although two smaller churches had previously been uncovered in Adulis, Castiglia's team was on a mission to find the city's ancient cathedral. "We know from the written sources that there was a bishop, so there must have been a cathedral," he says. "It couldn't be either of those two churches, because they are too small."

To begin their search, the team planned to revisit a site that was first uncovered by a British Museum expedition in 1868, which recorded finding an "early Byzantine church." Detailed information about these excavations was lacking, though. Even the church's location was uncertain since the British team had completely reburied it. As at Beta Samati, local villagers guided archaeologists where to look. Following their lead, the team uncovered sections of the building that had been excavated a century and a half earlier and carried out their own in-depth investigation that revealed the structure's full extent. They found the ruins of a huge complex, measuring 100 feet long by 65 feet wide, that had been built upon a 10-foot-high podium. It contained a large central hall divided into three naves with a semicircular apse at one end. This plan is consistent with the typical design of early Christian basilicas.

Dating to the sixth century A.D., around two centuries after the church in Beta Samati, the grand Adulis complex is evidence of how much the influence of Christianity had grown, of the influx of wealth into the empire, and of the increased sophistication of Aksumite construction methods. Archaeological work

has shown that the structure's interior was once filled with an array of pillars and columns, ornately sculpted stone window slabs and chancel screens, and painted plaster walls. "It has better building techniques and an impressive amount of alabaster and marble," Castiglia says. "We believe it's the cathedral, which is why we went there—we were lucky."

Upon examining remnants of the building more closely, archaeologists learned that much of its decoration, especially the marble, had been imported from around the Mediterranean and even from as far as the Pyrenees Mountains, 3,000 miles away. Excavations nearby have uncovered amphoras from Syria, a statuette from India, and even Chinese ceramics. "This gives you an idea about the network of contacts this area had with the rest of the world," Castiglia says. Goods from around the globe could be found in Adulis' shops, foreign languages could be heard on its streets, and people of different cultures mixed along its shorefront. "Archaeologists tend to see the ancient world as Mediterranean-centered because of the Roman Empire, but it was not at all," says Castiglia. "We can easily say that back then, the world was already globalized, and the Aksumite Empire was really the key area that connected the East and the West, the Indian Ocean and the Mediterranean. And Adulis was the key site because it was the only harbor the empire had on the Red Sea."

SEVERAL FACTORS CONTRIBUTED to the decline of the Kingdom of Aksum, including changing climatic conditions. The coastline of Adulis gradually receded away from the city, farther and farther into the Red Sea, greatly diminishing the city's ability to serve as an international port. The ancient site now sits more than three and half miles from the coast. Another factor may have been the rise of Islam. In the seventh century A.D., the new religion began emerging from the Arabian Peninsula. Historians believe that by the eighth century A.D., Muslim settlers had taken control of the Dahlak Archipelago, a strategic group of islands just off the coast of Adulis. It's possible that with this powerful new neighbor the Aksumites eventually lost control of the Red Sea trade networks that had fueled their wealth and expansion.



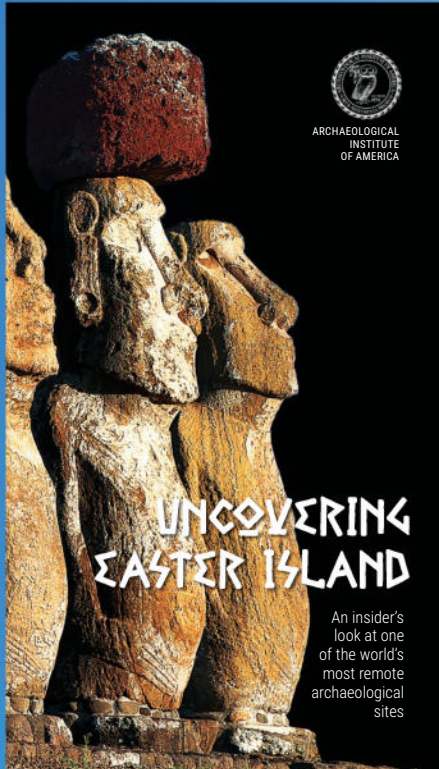
Excavations (top) in the port city of Adulis in Eritrea rediscovered a large church first unearthed in the nineteenth century. Archaeologists have determined that the building likely served as the city's cathedral in the sixth and seventh centuries A.D. An image (above) of the ruins of the Adulis cathedral shows some of its details.

Although the ancient civilizations of the Horn of Africa have remained on the periphery of research compared to other contemporaneous powers, the region teems with archaeological sites. In recent years, though, archaeology in the region has been halted as violent civil conflict ravages Ethiopia, and Tigray in particular. Further investigation of the monuments, temples, and cities of the region's once-glorious civilizations has been paused and new sites await identification once work resumes. "Occasionally, people publish articles about the end of archaeological discovery, that we have found everything, and there aren't going to be any more great discoveries," says Harrower. "But this really isn't the case in places like Africa. You can drive down the highway in Ethiopia and see major ancient towns and villages—they have just never been studied." ■

Jason Urbanus is a contributing editor at *ARCHAEOLOGY*.

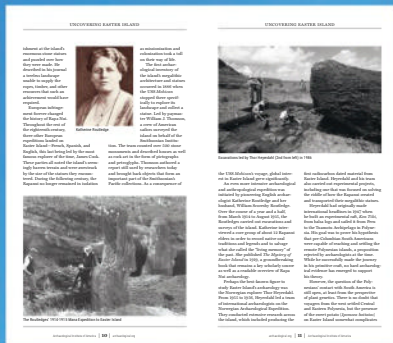


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The peaks of the Andes rise over Chile's Aysén region in Patagonia, the southern quarter of South America and one of the last places on Earth to be settled by humans.

LETTER FROM PATAGONIA

SURVIVING A WINDSWEPT LAND

For 13,000 years, hunter-gatherers thrived in some of the world's harshest environments

By **MATT STIRN**

The southern tip of South America is a region of extreme landscapes, where towering granite peaks and glacial ice caps give way to grasslands that fade into the ocean. Small huemul deer weave through stands of beech that are permanently bent sideways by the same powerful winds that lift Andean condors toward the clouds. Giant

rehas, large flightless birds similar to ostriches, dart across the open steppe, past herds of grazing guanaco, a wild llama, which nervously keep their noses to the wind, on the alert for prowling pumas. This vast region is known as Patagonia, and it encompasses the bottom quarter of South America, covering more than 400,000 square miles of Chile

and Argentina. It extends 1,300 miles from the thirty-seventh parallel south to the tip of Cape Horn, roughly equal to the distance between Maine and southern Florida. Known for some of the most severe landscapes, strongest winds, and most extreme weather in the world, Patagonia was one of the last places on Earth to be settled by humans, and archaeologists

LETTER FROM PATAGONIA

are now discovering an intriguing story about the skills, adaptations, and resilience it took for people to survive there. Archaeologist César Méndez of the Center for the Investigation of Patagonian Ecosystems notes that learning about the area's ancient people is particularly important because it was one of the only major regions in the world that was inhabited solely by hunter-gatherer groups until the arrival of Europeans. "Archaeology here can be viewed as a natural laboratory to observe the variability of mobile lifeways across time and space," he says.

The precise origins of the name Patagonia are uncertain, but it may have derived from a Spanish word for leg or foot, *pata*, which the explorer Ferdinand Magellan is said to have used to refer to the local Tehuelche people when his expedition encountered them in 1520. At the time, the Tehuelche, one of several groups who made the region home, were living as hunter-gatherers, as people had in Patagonia for millennia. Because so much of the native population in Patagonia was eventually wiped out by European colonizers—with the exception of some small surviving communities including the Kawésqar in coastal Chile, the Yaghan in Tierra del Fuego, and the Aonikenk in Argentina—archaeological research

provides the only way to reveal the region's long human story.

Scholars know that people have lived in Patagonia since at least the end of the last Ice Age, around 12,000 years ago. Until recently, however, they had believed that people likely abandoned large swaths of the region during a time of particularly severe weather patterns, based on a gap in the archaeological record from 8,000 to 4,000 years ago. After years of survey and excavation of hunter-gatherer campsites in northern Argentine Patagonia, archaeologist Raven Garvey of the University of Michigan has found that, in fact, people never left. Her work is showing that by constantly adapting to shifts in the environment and developing a specialized suite of hunting technologies, the ancient hunter-gatherers of Patagonia were able to thrive even in times of radical environmental change.

The eastern side of Patagonia is primarily within Argentina's borders and consists of deciduous forests and open grassland steppes bordered by the Atlantic Ocean, while the far western side is composed of



dense evergreen forests that include stands of the endangered *pehuén*, or monkey puzzle, tree that crawl up the slopes of the Andes. In this western region, two glacial ice sheets, the Northern and Southern Patagonian Ice Fields, are cut by steep ravines and fjords that lead to the Pacific Ocean. The western and eastern parts of Patagonia each have a distinct environment,

but together they present diverse opportunities, resources, and weather patterns that ancient people had to navigate creatively.

Based on evidence from sites such as Piedra Museo in Argentine Patagonia, the first forays by hunter-gatherers into the region likely occurred around 12,800 years ago. It appears that as the Ice Age was reaching its end, hunter-gatherer groups settled in the grassland steppe of northern Patagonia by 12,500 years ago. They journeyed west into the valleys and forests of Chilean Patagonia and south all the way to Tierra del Fuego by about 11,500 years ago.

Archaeologists continue to debate how long it took for people to arrive in the region after the first people crossed into North America from



A huemul deer (left), rheas (center), large flightless birds similar to ostriches, and guanacos (right), a type of wild llama, are all species native to Patagonia that would have offered hunter-gatherers plentiful game to hunt.



Patagonia's beech forests, known as *lenga*, began to grow in the Andean foothills as the last Ice Age ended around 12,000 years ago and the warmer Holocene epoch began.

northeast Asia. Trekking from the Bering Strait to the northern reaches of Patagonia requires crossing 10,000 miles of tundra, mountains, desert, and tropical rainforest. In the 1960s, the archaeologist Lewis Binford conducted ethnographic research on the movements of Inuit hunter-gatherers and estimated that people could have covered this distance in approximately 200 years. However, whether or not the first people to migrate from North to South America were continuously on the move or made their way slowly in fits and starts over a few thousand years is an unresolved question. According to Garvey, the answer might be found in an unexpected source—the style of people's clothing.

For several millennia, throughout many places where cold weather is the norm, such as Siberia, Scandinavia, Alaska, and Central Asia, most Indigenous people have worn fitted, tailored clothing. Garvey thinks this was likely an adaptation they developed to live comfortably in places with low temperatures, where loose-fitting clothes would provide less insulation. While this pat-

tern is consistent across almost the entire globe, an exception is found in South America. Before the arrival of the Spanish, the continent's cold-weather inhabitants relied on ponchos, capes, and other draped clothing to keep warm.

Garvey believes that the difference in clothing styles—fitted in North America and loose in South America—indicates a slow and steady migration rather than a single rapid push from North to South America at the end of the Ice Age. If people traveled quickly over just a few hundred years, she argues, they likely would have retained their fitted clothing even as they crossed through the hot and humid rainforests of Central America. She thinks that the absence of fitted clothing in South America shows that people exchanged it for looser garments in their new tropical environs, thereby gradually losing the knowledge that fitted garments provided more effective protection from the cold as they slowly moved south over thousands of years.

When people first arrived in Patagonia, they quickly adapted to living in an extreme and hostile landscape.



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LETTER FROM PATAGONIA



The ruins of a semipermanent stone dwelling that was once home to families of hunter-gatherers were identified in Argentina's Neuquén Province.

“Patagonia is viewed as one of the hardest places to live in,” says Méndez, “but we need to remember that the first people to explore the southern tip of the continent had the means to hunt large game, exploit local foods, and move across a variety of landscapes and an array of conditions.” From approximately 13,000 to 11,200 years ago, people in Patagonia lived in a landscape dominated by open grasslands with little precipitation. Large forests had not yet established themselves due

to consistently cold temperatures, and both the foothills and high elevations of the Andes retained glaciers and deep levels of seasonal snow. Archaeological evidence from sites dating to this time suggests that people routinely traversed the landscape, spending most of their time camping on the steppe and in rock shelters that they returned to again and again.

Stone tools dating to this early period have been found to have been made using stone from far away, evi-

dence of these people’s highly mobile lifestyle. Their toolkits were composed of scrapers, stone axes flaked on both sides, and fishtail-style projectile points that were likely hafted to throwing spears. Studies of butchered animal bones demonstrate that guanaco was a crucial food source at this time. Isotope analysis of human remains dated to the end of the Ice Age carried out by Méndez supports this. Nitrogen isotopes from the plants and animals people consume amass in their bones. If an herbivore eats certain plants, the plants’ isotope signatures will pass into the animal. When the animal is hunted and eaten by a human, these same isotope signatures will pass into the person. In the case of ancient Patagonians, nitrogen isotope signatures detected in human skeletons match those found in steppe grasses, further indicating that people primarily ate guanacos that were grazing in grasslands.

As the Ice Age came to an end and the warmer Holocene epoch began, Patagonia’s climate shifted. Winters became wetter and snowier, and summers hotter and drier, fostering the growth of thick beech forests known locally as *lenga*. While the forests expanded into the foothills and coastal valleys, temperatures on the open grasslands rose considerably, and decreased summer rainfall restricted plant growth. This pattern of warmer and drier weather became incrementally more severe, reaching an apex during the Middle Holocene, which began around 8,000 years ago. As the climate changed, plants and animals had to adapt, and humans did, too. How people responded to the warmer and more arid conditions varied across Patagonia’s distinct environments. Archaeologists believe that along the Pacific coast, especially in northern Chilean Patagonia, the large number of shell mounds dating to this period

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LETTER FROM PATAGONIA

suggests that some communities began to rely more on maritime resources as the weather became unpredictable and land animals scarcer. Groups living near lower-elevation shrub and lenga forests moved to higher elevations that were less impacted by environmental changes.

People likely also found ways to mitigate the effects of the shifting climate in the open grasslands, but these strategies are less apparent to archaeologists. Across most of the Patagonian landscape, the number of inhabited sites dating to between 8,000 and 4,000 years ago seems to have dropped substantially compared to earlier periods. Archaeologists excavating rock shelters in the plains that had been used since people arrived in Patagonia have found that there was a hiatus during this time. Some have interpreted the gap in archaeological evidence as an exodus, but to others it hints at something more complex. “The apparent disappearance of people was intriguing to me,” says Garvey. “I tend to think of people as very resourceful and

imagined that the story was a bit more nuanced.” To better understand what happened during this period, Garvey has concentrated on sites in northern Patagonia in the Argentine provinces of Mendoza and Neuquén.

Over the course of several field seasons, Garvey and her team surveyed several hundred square miles of the rugged Patagonian landscape. They worked in areas such as riverbanks where sites were already known, and also ventured farther into the plains and surrounding foothills that had not been as thoroughly investigated. They identified dozens of new sites, including campsites, quarries, and semipermanent stone dwellings that spanned the entire history of human habitation in Patagonia. At the sites that could be dated to between 8,000 and 4,000 years ago, Garvey found local basalt and obsidian tools, suggesting that the hunter-gatherers who lived there likely did not travel far to obtain material for tools.

Rather than moving widely across the landscape as they had in other periods, people living through the radical

environmental changes of the Middle Holocene may have lived in a smaller range in the plains and surrounding foothills. If resources such as water and food became scarce as the climate became hotter and drier, it is possible that people stayed close to what they were familiar with. Garvey believes that the drop in the number of archaeological sites across Patagonia during this time might not be a sign that there were fewer people, but rather that the same people were simply leaving a smaller footprint on the landscape. If people remained in one area, she suggests, the number of campsites and butchery sites across the wider region would decrease as new ones weren’t being created. “As I looked at more sites from this time period,” she says, “I realized it was more of a behavioral story as opposed to an abandonment story.”

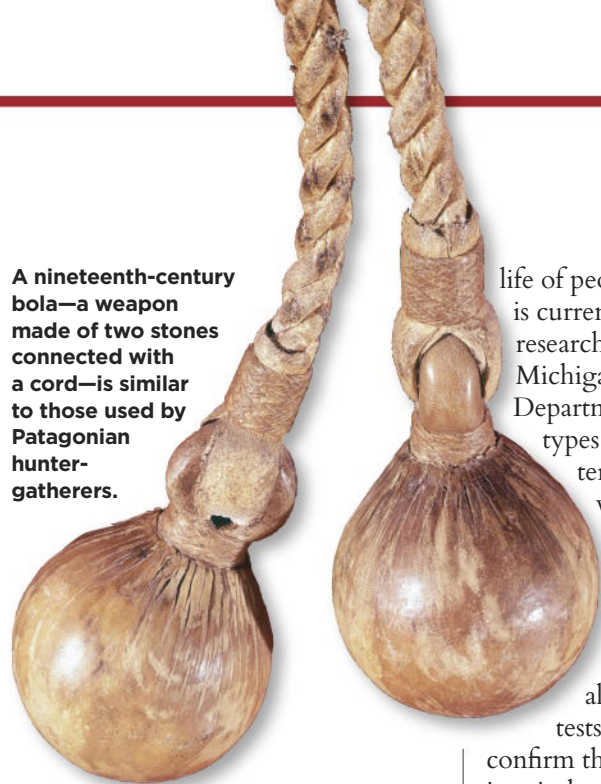
Garvey points out that while the plains offered bountiful resources such as large herds of guanaco and rheas, successfully hunting them required creativity. The landscape is relatively flat and very open, which would have made stalking prey difficult. Furthermore, the Patagonian winds—some of the most consistently powerful anywhere in the world, with steady speeds above 13 miles per hour and frequent gusts topping 60 miles per hour—likely developed during this time as a result of Antarctic sea ice expansion and increased temperature differences between cooler southern latitudes and subtropical regions in South America. The onset of high winds would have created an enormously challenging situation on the steppe, making it even



A large block of obsidian (above) in northwest Neuquén Province was quarried by hunter-gatherers who used the stone to create tools such as this ax (right).



A nineteenth-century bola—a weapon made of two stones connected with a cord—is similar to those used by Patagonian hunter-gatherers.



more difficult to hunt with projectiles such as throwing spears. Out of necessity, people developed strategies to get closer to their prey, such as using captured young guanacos to lure adults and by dressing in feathers to sneak up on rheas—techniques that were noted by early European observers.

Patagonians also relied on hunting implements that were likely to have been less affected by extreme crosswinds. One such hunting tool that was used in this period was the bola, a type of throwing weapon composed of two stones connected with a cord that is thrown so it wraps around a target's feet, rendering it immobile. Garvey observed that, as the intensity of the Patagonian winds grew, so did the number of chipped stone scrapers she found at the sites she surveyed. Probably originally used to process hides, these scrapers were later used to craft bolas. "Bolas are likely more effective than projectiles in windy conditions because with a projectile you need to hit the sweet spot of an animal to bring it down, and that's an extremely hard thing to do in a powerful wind," she says. "With a bola, all you need to do is ensnare the animal's legs." To help her understand more about the impact that wind had on hunting and the everyday

life of people in Patagonia, Garvey is currently collaborating with researchers at the University of Michigan Aerospace Engineering Department to test whether certain types of projectiles perform better than others in extremely windy conditions. She and her engineering colleagues are conducting tests in wind tunnels to imitate the impact of windy conditions on a flying object, alongside outdoor ballistics tests, which she hopes will confirm that bolas were superior in windy conditions, and to better understand how living in high winds, day and night, impacted past people's decision-making, movement, and technology.

periodic droughts, similar to modern-day weather patterns. Over the course of several generations, people again changed how they lived and moved across the land. It is likely that the more variable climate increased the availability of resources that had been limited during earlier, drier millennia, and that this encouraged people to expand their seasonal migrations once again. Méndez has conducted research in Chile's Aysén region, in western Patagonia, and found that during a severe drought around 2,800 years ago, more people began venturing into the area's thick evergreen forests, perhaps to seek new resources.

Animal remains that Méndez has unearthed at forest rock shelters show that people took advantage of the environment's biodiversity. Whereas



The Patagonian steppe landscape near the foothills of the Andes is buffeted by winds that can gust up to 60 miles per hour.

At the beginning of the Late Holocene, approximately 4,000 to 3,500 years ago, the Patagonian climate shifted again, becoming generally wetter with

those living on the plains hunted larger game such as guanaco, those living in the forests ate birds, rodents, huemul deer, pudu—the world's smallest deer—and a variety of plants. Despite these

LETTER FROM PATAGONIA



The pudu, the world's smallest deer, is native to the dense forests of western Patagonia, where hunting is difficult.

ample resources, however, the forests of western Patagonia presented their own set of obstacles. The Patagonian evergreen stands are extremely dense and many of the animals that live among the trees are solitary, making them difficult to track and kill. Although people continued to inhabit all of Patagonia into the eighteenth century, they only seem to have lived in Patagonia's forests in relatively large numbers for about 500 years before returning to the grasslands.

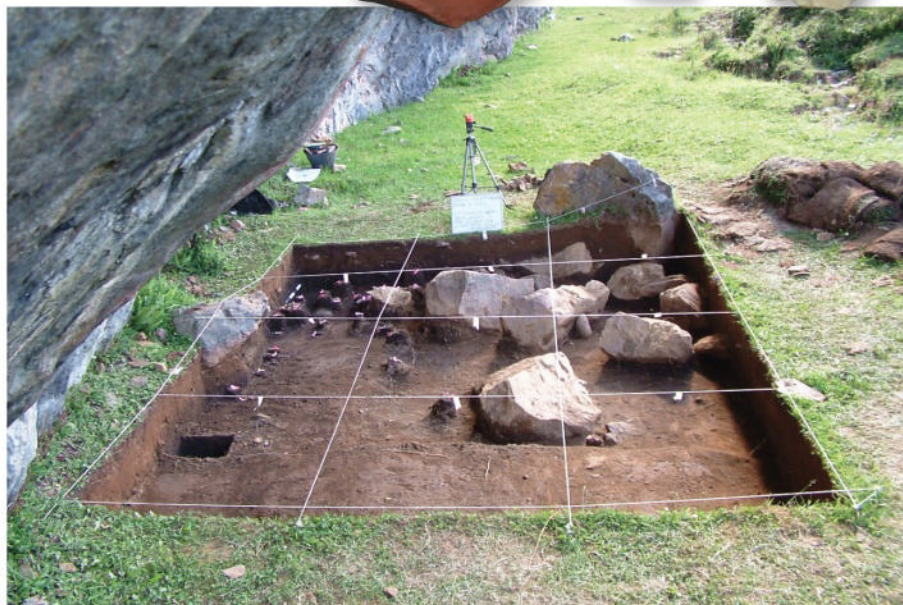
Whether in the forests or on the steppe, during a dry summer or in freezing winds, the ancient people of Patagonia maintained a deep connection with the changing world around them. Their way of life was so established and successful that they were among the few groups in all of South America to forgo the adoption of farming. While people living in the Peruvian Highlands may have domesticated squash as early as 10,000 years ago, most South American cultures did not widely adopt an agricultural lifestyle until between 5,000 and 4,000 years ago. By 2,000 years ago, people living on the northern boundary of Argentine Patagonia began to

cultivate maize, beans, squash, and quinoa instead of relying solely on hunting and gathering. But the southward spread of agriculture stopped at the edge of Patagonia, and people living in the region's heartland never became farmers. The extreme climate of Patagonia might have made it difficult to

successfully cultivate crops that are common throughout the rest of South America. However, even in the farthest northern reaches of Patagonia, where it would have been easier to grow these crops, some hunter-gatherer groups appear to have maintained their way

of life in close proximity to farming communities.

Scholars remain uncertain about why the region's hunter-gatherers didn't adopt agriculture. As farming took hold in the north, the availability of wild resources was becoming less certain due to weather patterns that fluctuated unpredictably between hot and dry and wet and cold. During this time, the number of hunter-gatherers in Patagonia was increasing due to natural population growth. Turning to farming would have offered a logical way of feeding a growing population, a choice made by hunter-gatherers across the world. Garvey suggests it is possible that Patagonians didn't need



A rock shelter (above) in the forests of the Aysén region yielded stone tools (top) used by people who ventured into the region during a dry period around 2,800 years ago.

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University of Michigan archaeologist Raven Garvey searches for artifacts in soil unearthed during excavation of a rock shelter in the Aysén region.

to farm because the landscape provided them with more food than archaeologists have previously supposed. She also says that Patagonia's hunter-gathers may not have transitioned from hunting and gathering to farming simply because maintaining their time-tested traditions and methods of living off the land was more important than adopting agriculture. "We have been hunter-gatherers for the vast majority of human history, yet we know so little about it," Garvey says. "The more sites we can discover and compare to one another, the better we'll be able to understand the fascinating behaviors and adaptations from our past." ■

Matt Stirn is a journalist and photographer based in Jackson Hole, Wyoming, and Brookline, Massachusetts.



AIA NEWS

Updates from the *ARCHAEOLOGICAL INSTITUTE of AMERICA*

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Thank you to everyone who made a gift to celebrate AIA Giving Day on April 25, 2023. This year—the second time we have celebrated Giving Day—a generous group of donors matched donations, dollar for dollar, up to \$6,000. We raised almost \$13,000 before the actual day and over \$20,000 in total. Your gift, regardless of size, reflects your commitment to support the AIA's mission to excavate, educate, and advocate.

AIA Supports Young Archaeologists Through Travel Fellowships



Victoria Priola

An essential component of the AIA's mission is to support young professionals as they enter the field of archaeology. To that end, we offer scholarships, grants, and fellowships each year, enabling young archaeologists' professional development by funding their research endeavors. These fellowships reflect our commitment to training the next generation of archaeologists.

This summer, the AIA is sending five young professionals into the field to work on various projects across the globe. To celebrate our 2023 fellowship recipients, we will spotlight each of our winners in news stories on our website. We have talked with each of our winners to learn about their projects, backgrounds, and experiences in

archaeology. We're excited for you to meet each of them, beginning with one of the Archaeology of Portugal Fellowship winners, Victoria Priola.

Victoria got her start in archaeology as an undergraduate studying anthropology at the University of Central Florida. While there, she had the opportunity to work on a field project that solidified her passion for archaeology and inspired her to pursue additional fieldwork opportunities, graduate school, and ultimately a career in archaeology. Her fellowship project examines regional interactions in southwestern Iberia during the Late Neolithic and Chalcolithic periods from the late fourth to third millennium B.C. through the lens of textile production.

You can read more about Victoria and her peers at archaeological.org/news.

Join us at the 2024 AIA Annual Meeting in Chicago

Head to the Windy City next January 4–7 to have the chance to choose among hundreds of presentations on the latest archaeological discoveries. Many sessions will address the theme of movement, mobility, and displacement—of people, things, and ideas. Visit archaeological.org/annualmeeting for more information as the date approaches.

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Saving Bears Ears National Monument

This year, the AIA awarded a Site Preservation Grant to a conservation project at the Twin Kivas site in Utah's Bears Ears National Monument. Bears Ears is managed by the Bureau of Land Management, the U.S. Forest Service, and a coalition of five Native American tribes with ancestral ties to the land: the Navajo Nation, the Hopi Tribe, the Ute Mountain Ute Tribe, the Ute Indian Tribe of the Uintah and Ouray Reservation, and the Pueblo of Zuni. It is the first national monument that has tribal collaborative management written into its proclamation.



A kiva is a semisubterranean structure of spiritual significance to the Pueblo peoples of the Southwest. In recent years, the Twin Kivas site has incurred damage from an increasing number of visitors, erosion, rat infestations, and structural collapse. The AIA grant will go to Bears Ears Partnership to fund a conservation crew that will stabilize the site, introduce sand fill to prevent erosion, and reroute the trail leading to the site to bypass vulnerable features. The team will use minimal-impact solutions preferred by consulting Native American groups.

The project is led by Indigenous youth who are members of the Ancestral Lands Conservation Corps (ALCC) and conservation experts from Woods Canyon Archaeological

Consultants. The ALCC provides meaningful employment and job training to Indigenous youth. The team will use culturally relevant conservation techniques at the Twin Kivas and engage with their ancestral lands.



The AIA Site Preservation Program supports more than three dozen threatened sites at home and abroad and emphasizes holistic and high-impact projects with lasting outcomes, such as the one being conducted at the Twin Kivas site. You can join us in our efforts to safeguard archaeological sites with a donation at archaeological.org/savesites.



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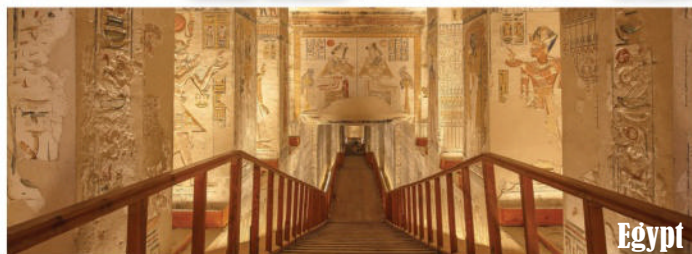
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When she first saw the small shining disk soon after it was discovered in the town of Vindelev in 2021, runologist Lisbeth Imer of the National Museum of Denmark had an inkling of what its inscription might say—but it was extremely hard to read. Though expertly rendered, the runes are only about one-sixteenth of an inch tall, and Imer had to wait until she could examine them under a microscope. The inscription is unusually long, and also very worn, possibly because the disk sat in the cool Danish soil for more than 1,500 years, or perhaps, Imer says, because the words were so sacred that whoever wore it as a pendant touched them again and again. Furthermore, the language used, known as Proto-Norse, is difficult to translate because so little of it has been seen. “Every time we encounter a new find containing a Proto-Norse inscription—which is very rare—we have to compare it with sister languages and reconstruct back from the Viking language, Old Norse,” Imer says.

Along with Krister Vasshus, a linguist at the University of Bergen, Imer was finally able to decipher the 34 or 35 tiny runes, and determined that they read, in part, “He is Odin’s man.” This is the oldest written reference to the Norse god of war and of the dead ever found, dating to 150 years earlier than the next known mention of Odin. Imer explains that it is the god’s relationship to the man depicted on the disk, whom the inscription names as “Jaga” or “Jagaz,” and who she believes was a king or local governor, that is so significant. “With this discovery,” she says, “we have a text that tells us that the person depicted on the bracteate was a king of divine descent.” The ruler’s divine ancestry is also reinforced by the swastika, representing the sun, and a crescent, probably representing the moon, in front of his face. “What’s so important to learn,” Imer explains, “is that religion was embedded in rulership at this early point in Norse history.”

WHAT IS IT
Bracteate, or ornamental disk
MATERIAL
Gold
CULTURE
Norse
DATE
Early 5th century A.D.
DIMENSIONS
2 inches, weight 0.02 ounces
FOUND
 A map of Denmark with a red dot marking the location of Vindelev in the southwest and a red star marking Copenhagen in the east. The word 'DENMARK' is written across the top of the map.





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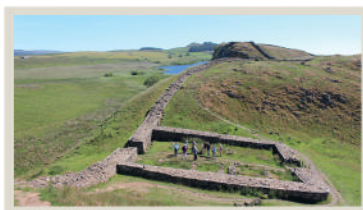
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